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Measuring Regulatory Focus on the Basis of Behavior: Prevention in a Quiz Game

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Measuring Regulatory Focus on the Basis of Behavior: Prevention in a Quiz Game

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Abstract

Over the last decades, Regulatory Focus Theory (Higgins, 1997) has taken over a major role in research on motivation and goal-setting. However, two of the most prominent and widely used measures of regulatory focus, RFQ and GRFM, lack in validity (Summerville & Roese, 2008). Therefore, the goal of the study was to develop a new measure of prevention focus that is based on actual behavior instead of introspection and self-report. The new measure was part of a quiz game in which the subjects could protect themselves against random attacks of a "greedy goblin" by entering a long and complex code. How often subjects entered the code served as the measure of prevention. The final sample comprised 120 subjects (54% females, $M_{age} = 25.7$, $SD_{age} = 7.9$, range $19 - 70$ years) which mainly were students at the University of Vienna. To validate the game, subjects were randomly assigned to either the Promotion group receiving a gain/non-gain framing ($N = 62$) or the Prevention group receiving a non-loss/loss framing ($N = 58$). Subjects also answered RFQ and WRF to see whether prevention measured by the game correlates with external measures of regulatory focus. The two groups did not differ in the number of code inputs, $U(n_{Prevention} = 58, n_{Promotion} = 62) = 1.787$, $z = -0.06$, $p = .95$. However, the number of code inputs correlated significantly with the prevention scale of WRF, $r(120) = .22$, $p < .05$, and also with the subscale *Security*, $r(120) = .26$, $p < .01$, and almost significantly with the subscale *Gains*, $r(120) = -.18$, $p = .053$. *Security* and *Gains* were significant predictors of the number of code inputs, even after controlling for motivation, involvement in the game, and affect. Thus, the game can be seen as an important first step in the quest for a new, behavioral, and thus more valid measure of prevention.

Keywords: motivation, regulatory focus, prevention, measure, strategic behavior

Introduction

Motivation plays a key role in every part of our life. In fact, it is the driving force behind every action we carry out consciously guiding us along the path of decisions, choices, and challenges we are concerned with day by day. We are motivated to reach goals, especially those we have set for ourselves. Whenever it comes to a decision, we favor the option that is the most likely to help us attain a specific goal. However, we can not only differ in *what* goals we strive for but also in *how* we do this, how exactly we behave in the course of goal attainment. The very same goal can be pursued very differently in regard to specific motivational strategies.

What this means practically can aptly be illustrated by an example derived from sports, more specifically from the area of association football. The natural, proximal goal in competitive team sports is it to win a match and make the opponent lose. Put simply, in football it is all about having scored at least one more goal than the opponent has at the end of playing time. With this as the to-be-attained goal all football (and sports) teams have in common, the teams' specific *modus operandi* in the process of goal attainment can differ widely.

Imagine a pre-match locker room speech. The team's coach can give his or her players the directive of doing everything they can to score as many goals as possible, thus calling for an offensive tactic. Or, in contrast, he or she can instruct the team to focus on receiving as few goals as possible, thus calling for a defensive tactic. Successfully applied, the offensive tactic might lead to a result of 5-4, while the defensive tactic might make the team ending the match with 1-0. In both cases, the team's goal of winning the match would have been attained (both had the same desired end-state), but the how of goal attainment would have differed very much, since each tactical strategy had its own motivational core: Promote the scoring of goals versus prevent the receiving of goals. The offensive tactic would have

made players approach a desired end-state (of scoring goals), whereas the defensive tactic would have made them avoid an undesired end-state (of receiving goals).

With this held in mind, it becomes clear that in the course of playing players would have acted very differently depending on the tactic their coach had chosen in preparation for the match. Playing under the offensive tactic might have resulted in making more risky decisions, since a gain (scoring goals) is to be approached, and a non-gain (scoring no or not enough goals) is to be avoided. In fact, the reference point "non-gain" of the promotion-focused players as an undesired end-state is not a "physical thing", but rather a missed chance that still can be taken. In contrast, players under the defensive tactic might have been focused much more on caution and safety, since a non-loss (receiving no goals) is to be approached, and a loss (receiving goals) is to be avoided. In this case, the reference point "loss" of the prevention-focused players as undesired end-state indeed is a "physical thing". Once a goal against occurred it cannot be erased from the scoreboard making it unhappen.

This may serve as a first rough yet plausible explanation for the behavioral differences between promotion-focused and prevention-focused individuals. The two tactics create two distinct motivational "spheres". Inside the offensive, promotion-focused sphere a goal against is obviously not seen as equally bad as it is the case inside the defensive, prevention-focused sphere, since players of the former can still catch up to their goal of scoring (more) goals and thus experience success. Players of the latter however need to deal with all the severe emotional and motivational consequences of failure the goal against entails, since once they received a goal they irreversibly failed to attain their goal of not receiving a goal. However, players playing out the defensive tactic are likely to not bother with not having scored many or even any goals even with the end of playing time in sight as much as the players under the offensive tactic would do. The former still can experience success if no goals against will have been received at the end of playing time, whereas failure is more and more in sight of the latter, since the coach's directive of scoring goals is more and more likely to not have been

followed adequately with every other minute passing by in which no goal is scored. The overall point here is that the same goal can be attained through different self-regulatory strategies, which each for its own has distinct implications for motivation, behavior, and emotions.

Viewed from the perspective of the hedonic principle (Higgins, 1997; Freud, 1920/1950; for a discussion, see Elliot & Covington, 2001), our behavior is constantly driven by motives that make us approaching something we want, i.e., pleasure, and avoiding something we do not want, i.e., pain. But this just refers to *what* goals we try to attain. The question of *how* we actually can pursue goals is beyond the scope of the hedonic principle. Thus, as it solely tries to quantify what is pleasure and what is pain, the hedonic principle alone cannot explain why there are so many differences in human motivation and behavior.

By postulating Regulatory Focus Theory, Higgins (1997) extended the concept of approach and avoidance behavior by two quite essential factors: promotion focus and prevention focus. These two foci represent two fundamental and independent motivational strategies people can make use of in the process of goal-attainment, thus allowing for a more comprehensive understanding of human behavior compared to only judging whether pleasure is approached or pain is avoided.

Applied to players involved in a football match, the one who is more oriented towards winning the game, scoring goals, being offensive, and who strives for advancement by "taking the risks" is said to have a promotion focus. Conversely, the one who emphasizes not losing the game, preventing goals against, being defensive, and who prioritizes security is said to have a prevention focus (Higgins, 1997).

In the last decades, Regulatory Focus Theory has taken over a major role in research on motivation, goal-setting, and behavior. It has been applied to a variety of different fields and research topics, such as organizational behavior (Lanaj, Chang, & Johnson, 2012; Gino & Margolis, 2011), consumer decision making (Florack, Ineichen, & Bieri, 2009), leadership

styles (Kark & van Dijk, 2007), group psychology (Florack & Hartmann, 2007), health

psychology (Fuglestad, Rothman, & Jeffery, 2008; Zhao & Pechmann, 2007; Klenk,

Strauman, & Higgins, 2011), and even learning (Rosenzweig & Miele, 2016) and language

use (Semin, Higgins, de Montes, Estourget, & Valencia, 2005).

Because there is such a great interest in the concept of promotion and prevention it

appears indispensable to have at hand a valid measure with which an individual's regulatory

focus can be assessed in order to arrive at substantial conclusions for intervention and theory

development. But the problem is, at present, that this is not the case, and a measure of

regulatory focus that fully meets the standards of validity is lacking.

As Summerville and Roese (2008) showed, two prominent and widely used self-report

scales for assessing an individual's chronic regulatory focus, namely the Regulatory Focus

Questionnaire (RFQ; Higgins, Roney, Crowe, & Hymes, 1994; Higgins, Friedman, Harlow,

Idson, Ayduk, & Taylor, 2001) and the General Regulatory Focus Measure (GRFM;

Lockwood, Jordan, & Kunda, 2002), do not correlate with each other. Furthermore, among

different established measures of regulatory focus, there is only little theoretical and empirical

overlap (Haws, Dholakia, & Bearden, 2010).

Therefore, the present study aimed at proposing a new measure of an individual's

prevention focus that is based on goal-directed behavior (in a computer game) and thus

capable of demonstrating that prevention is as much linked to taking action as it is promotion,

clearly distinguishing it from avoidance behavior (Carver & White, 1994). Such a behavioral

measure of prevention would be more objective and possibly more valid and accurate than

traditional self-report measures of regulatory focus.

Regulatory Focus Theory

Though well-known and established models of self-regulation include the distinction

of approaching desired end-states and avoiding undesired end-states, they neither take into

account the different ways of how certain desired end-states can be approached, nor do they

distinguish between different types of desired end-states. However, Regulatory Focus Theory does so.

As Higgins (1997, p. 1281) stated, "the theory of self-regulatory focus begins by assuming that the hedonic principle should operate differently when serving fundamentally different [survival] needs". These needs can be differentiated into needs of nurturance and needs of security. The particular social environment a child is exposed to in its early years lies the foundation for developing a specific self-regulatory strategy in regard to whether the parenting style is based on the fulfillment of mainly nurturance needs or mainly security needs.

What kinds of end-states children desire the most depends on the interaction with family and caretakers they experienced throughout their process of socialization. These interactions influence the type of "self-directive standards" (Higgins, 1987, p. 321), i.e., the type of self-guide children try to emulate (Hodis, 2017). A socialization focusing on attaining own or significant other's hopes, wishes, and aspirations, i.e., ideal self-guides relating to nurturance needs, entails that children are likely to develop a promotion focus. In contrast, a socialization based on being safe and living up to the beliefs of own or significant other's duties, obligations, and responsibilities, i.e., ought self-guides relating to security needs, is likely to cause a prevention focus (Higgins, 1997).

Besides this self-guide definition, regulatory focus can also be defined in terms of reference points (Summerville & Roese, 2008). A promotion focus implies being sensitive to the presence or absence of positive outcomes (i.e., gains vs. non-gains; Higgins, 1997; Higgins, 2012). Consequently, promotion-focused individuals are inclined towards approaching matches to desired end-states using gains as a reference point and representing success as the presence of gains and failure as the absence of gains. In contrast, a prevention focus is associated with a higher sensitivity to the absence or presence of negative outcomes (i.e., non-losses vs. losses; Higgins, 1997, 2012). This results in prevention-focused

individuals being inclined towards avoiding mis-matches to desired end-states using losses as a reference point and representing success as the absence of losses and failure as their presence.

As a consequence, individuals differ in self-regulatory strategies they prefer in the process of goal-attainment. Promotion-focused individuals are eager to attain a desired, positive end-state, to approach a certain status-quo, an advancement, a gain, and thus emphasize in terms of signal-detection theory (Tanner & Swets, 1954) on hits while insuring against misses. Conversely, prevention-focused individuals are vigilant to maintain a status-quo, to avoid an undesired, negative end-state, and to insure safety. Therefore, they emphasize correct rejections while insuring against false alarms (Higgins, 1997). Furthermore, regulatory focus is said to influence speed/accuracy decisions in different tasks with promotion-focused individuals showing higher speed and prevention-focused individuals showing higher accuracy (Förster, Higgins, & Bianco, 2003).

According to Higgins (1997), Regulatory Focus Theory is also capable of explaining the different emotional reactions to failure. Failing to attain promotion-related goals, which are linked to hopes and ideals, makes individuals experience dejection-related emotions such as "dissappointment, dissatisfaction, or sadness" (p. 1288), while promotion success leads to cheerfulness. In contrast, failure in the attainment of prevention-related goals, which refer to duties and responsibilities, provokes agitation-related emotions such as anxiety, discomfort, and threat.

However, though individuals differ in which self-guide can be assessed the most readily, they can activate promotion and prevention focus at the same time, thus being sensitive to both positive and negative outcomes (Hodis, 2017; Higgins, 1997, 2012). This implies that promotion and prevention should not be seen as endpoints of a single bipolar construct, but rather as two coexisting systems (Higgins, 2000) that can be defined through self-guide as well as reference point approaches.

Research Problem

The complex conceptual nature of promotion and prevention has not yet been addressed comprehensively and adequately by existing measures of regulatory focus. For example, while the RFQ mainly focuses on the self-guide conceptualization of ideals versus oughts, the GRFM is much more closely built along the reference-point definition. Thus, two prominent and widely-used measures claiming to assess an individual's regulatory focus in fact relate to different theoretical aspects of regulatory focus theory definition. This might be the reason why participants' responses on the two measures turned out to be largely uncorrelated (Summerville & Roese, 2008).

Another problem concerns the way promotion and prevention are operationalized, especially in the RFQ. Here, promotion focus is measured primarily by asking questions about possible actions of the present, while measuring prevention focus contains questions and statements relating to events in the past. This is likely to lead to a temporal bias.

So far existing measures of regulatory focus have also failed to adequately take into account the fact that promotion focus and prevention focus can be activated simultaneously therefore representing two distinct motivational systems (Haws, Dholakia, & Bearden, 2010). Referring to this issue, Haws *et al.* (2010, p. 981) end their review of chronic regulatory focus measures by outlining that "the use of any measures should avoid collapsing promotion and prevention orientations into a single dimension" and eventually recommend "assessing chronic regulatory focus when using situational manipulations of promotion and prevention orientations".

Finally, what hitherto might have hindered a comprehensive understanding of regulatory focus is a sometimes consciously carried out categorization of the two foci along the lines of advantageous and disadvantageous, as it led to a biased prevention scale in the GRFM (Summerville & Roese, 2008). A promotion focus has often been associated with successful goal-attainment, while the reverse applies for its counterpart: A prevention focus

has often been understood as a somehow disadvantageous or even unsuccessful and a thereby negative and to-be-avoided motivational strategy. Hence, recent research has tended to characterize promotion focus as preferable and has linked it to positive constructs such as higher subjective well-being and life satisfaction (Manczak, Zapata-Gietl, & McAdams, 2014).

However, promotion and prevention focus do not relate to behavioral and emotional outcome concerns in a way approach behavior (originating from a behavioral activation system) and avoidance behavior (originating from a behavioral inhibition system) measured with the BIS/BAS scale (Carver & White, 1994) do. Rather, as they reflect two distinct self-regulatory strategies of promoting a match to a desired end-state vs. preventing a mis-match to a desired end-state, they both explain how a goal can be pursued and thus can both lead to successful goal-attainment and well-being, as shown in the example of association football. Put more generally, both regulatory foci equally provoke goal-directed behavior, no matter whether a match is approached or a mis-match is avoided.

Only because Higgins chose the terms "approach" and "avoidance" in postulating Regulatory Focus Theory, this does not mean that promotion and prevention can be regarded conceptually related to BIS/BAS where the avoidance-based behavior elicited by the BIS is supposed to inhibit and suppress any form of (goal-directed) behavior. This is an important tenet of Regulatory Focus Theory which Haws *et al.* (2010) in their assessment of different regulatory focus measures unfortunately seem to have overlooked, for they include in their analyses and theoretical discussions the BIS/BAS scale in one line with other measures like RFQ, GRFM, and the Selves Questionnaire.

Also, they state "an absence of emotional content in its items" (p. 979) as a limitation of the RFQ. However, with regard to the original conceptualization of Regulatory Focus Theory, the unrelatedness of the RFQ to affect valence is in fact a feature one would define as desirable for a measure of promotion and prevention (cf. Summerville & Roese, 2008).

Lastly, it does not appear groundless to consider epistemological difficulties caused by the individual's possible inability to gain as much insight into one's own self-regulatory orientation as would be required to have it depicted reliably and veridically in the results of a questionnaire.

Because research so far lacks a measure of regulatory focus that is valid in terms of theoretical consistency and that is free from biases and the limitations of self-reports, it would be desirable to have at hand an operant, behavioral measure that allows to test for an individual's regulatory focus in an objective and thus more valid manner.

Against the background of attempting to create such a new and valid measure, it seems essential to once more reconsider what Higgins (1997) originally meant by using the terms approach and avoidance while conceptualizing regulatory focus theory, namely approach and avoidance as strategic means in the form of approaching matches to desired end-states (promotion focus) and avoiding mis-matches to desired end-states (prevention focus).

Instead of assessing the chronic strength of promotion and prevention concerns based on the accessibility of ideal and ought self-guides as done by the traditional and popular questionnaires of regulatory focus, it seems useful to direct attention to an individual's behavior in a particular situation which allows for a promotion strategy and a prevention strategy as well to reach a desired end-state.

In this case, regulatory focus would be "situationally induced as a momentary state by framing goal pursuit success and failure either as promotion concerns with gains and non-gains or as prevention concerns with non-losses and losses" (Higgins & Cornwell, 2016, p. 57). An adequate measure, which takes these aspects into account, would bypass the well-known limitations of self-reports and would allow researchers to assess an individual's situational induced regulatory focus in a highly objective and thus valid way.

Promotion and prevention could then ideally be identified by examining the strategic actions an individual adopts (more) in a specific situation after goal pursuit success has been framed either as a promotion or a prevention concern.

Study Overview

The goal of the study was to find a new measure of an individual's prevention focus. The reason why I decided to focus on prevention and not on promotion (or both) is because I had the ambition to show that a prevention focus is as much linked to taking action as it is a promotion focus, in order to separate it clearly from avoidance behavior.

The new measure should be more objective and more closely related to actual behavior for it to stand a good chance to turn out, in future research, as being more valid and accurate than traditional self-report measures of regulatory focus, such as RFQ or GRFM, in predicting an individual's subsequent behavior. Based on the assumption that prevention-focused individuals should be more inclined to invest effort in taking precautions when there is a threat of losing a status quo, I created a simple computer game. Therein, prevention was supposed to be depicted in how often a subject chose to carry out the strategic action of protecting an incentive it was about to receive in the future against randomly occuring attacks. Without protection an attack would lead to the immediate loss of that incentive.

Thus, the present study aimed at assessing the strength of a subject's prevention focus by the means of a computer game which contained a measure directly related to one of the main characteristics of prevention: taking precautions and securing oneself against possible losses (Higgins, 1997). For the purpose of a validation of the game as measure of prevention, subjects were randomly assigned to two conditions. One group received a promotion framing and the other group received a prevention framing. This was done to see whether those subjects with a situationally induced prevention focus might carry out prevention-related strategic actions (i.e., protecting a status quo) in the course of the game indeed more often

than those subjects with a situationally induced promotion focus. Based on this, I assumed that:

H_1: In a non-loss/loss (prevention) condition, subjects are more inclined to show strategic actions in a computer game to secure a status quo than subjects in a gain/non-gain (promotion) condition.

Furthermore, the new objective measure of prevention contained in the computer game should correlate with external measures of prevention focus. For this purpose, the RFQ and the Work Regulatory Focus Scale (WRF; Neubert, Kacmar, Carlson, Chonko, & Roberts, 2008) were applied in the study. I assumed that:

H_{2a}: There is a positive correlation between an individual's prevention focus as measured by the computer game and its prevention focus as measured by the RFQ.

H_{2b}: There is a positive correlation between an individual's prevention focus as measured by the computer game and its prevention focus as measured by the WRF.

Method

Participants

To determine a minimum sample size, I conducted an a priori power analysis for a two independent samples t-test with $d = 0.50$ using the software G*Power (Faul, Erdfelder, Lang, & Buchner, 2007). Based on $\alpha = .05$ and $1 - \beta = .80$, the analysis yielded a sample size of 102 with 51 subjects per group.

At the end of data collection, 128 subjects had completed the study, together making up a convenience sample. Eight subjects had to be excluded due to severe problems with

understanding the rules of the game, as it was judged by the experimenter before the start of or during the experiment. Therefore, the final sample, with which all calculations were run, comprised 120 subjects (54% females, $M_{age} = 25.7$, $SD_{age} = 7.9$, range $19 - 70$ years). The subjects were randomly assigned to a Promotion group ($N = 62$) and a Prevention group ($N = 58$). A part of the subjects were students of the University of Vienna and received course credit for participation.

Design

The study had two parts. In the first part, subjects played a quiz game which comprised a new behavioral measure of prevention. For the purpose of a validation of that new measure, subjects were randomly assigned to two experimental conditions, a Promotion group and a Prevention group. This created a between-subjects design. In the Promotion group, task success in the quiz game was framed as a matter of gain/non-gain, while contrarily task success in the Prevention group was framed as a matter of non-loss/loss. Additionally, external measures of regulatory focus, motivation, and affect were applied to serve as predictors of the new behavioral measure of prevention.

Quiz Game

As main part of the study I created a computer game which consisted of multiple choice quiz questions embedded into a fictitious background story. The story contained fairytale-like elements and characters such as a king, a greedy goblin, "protection spells", and magic bowls filled with the "water of truth". This served the purpose of making the game both interesting and motivating to play for the subjects and to facilitate getting involved in its otherwise rather simple structure.

The subjects had to imagine being denizens of a small kingdom that is ruled by a clever and just king. To celebrate his birthday he organizes a lottery where money from the royal treasury can be won. The exact amount of prize money a denizen can win however depends on his or her performance in a quiz game. Thus, winning actual money first required

giving sufficiently many correct answers to the quiz questions and then second being selected in the lottery, making the prize money that could be gained in the game a *potential* prize money.

Main task. The subjects answered in total 24 questions which were spread over four blocks with six questions each. With every given answer, no matter if correct or not, subjects collected a small black stone that then appeared on the screen. Thus, by working through the four blocks subjects could collect a maximum of 24 black stones.

After each block, all collected black stones of a block (6 at maximum) were put into a magic bowl filled with the water of truth. Getting in contact with the water of truth made a black stone turn white if the answer to the corresponding question (i.e., the question where that exact stone had been collected) was correct. If the answer was false, the black stone remained black. Thus, with this procedure, subjects did not see which, but only how many questions of a block they had answered correct, as was represented by the number of white stones in the bowl of a block.

If the subjects managed that the bowl of a block contained three or more white stones, they gained a mini chocolate bar (16.67 g) worth €10 of potential prize money. This potential prize money was money the subjects could later, after the completion of data collection, actually win in a lottery.

The quiz questions (entirely listed in APPENDIX A) were not selected in accordance to any criteria regarding their thematic nature or a specific topic to refer to, but should only be interesting, maybe also funny, and, most importantly, not too easy and not too hard to answer. The style of presenting the questions was inspired by the German TV show *Wer wird Millionär?* (Who wants to be a millionaire?). Each question had four response options of which only one was correct. A small part of questions was meant to be solved rather easily, thus representing questions able to somehow "re-motivate" the subjects in the case of

increasing frustration after too much questions in a row might have been exceeding one's own knowledge level. The questions were presented in the exact same order for everyone.

Attacks. Collecting the maximum number of 24 black stones in order to maximize the chance of gaining all four mini chocolate bars worth the maximum potential prize money of €40 however was rarely the case, as during the game the subjects were "attacked" at random intervals by a greedy goblin that was after the black stones. In the case of an attack, the goblin showed up immediately after an answer to a question had been given to steal a subject's just collected black stone. The intervals between the goblin's attacks were set a priori and were the same for all subjects. In total there were nine attacks: two in block 1, three in block 2, two in block 3, and another two in block 4. With "a" symbolizing an attack and "b" symbolizing no attack, the detailed pattern of attacks was b-b-b-a-b-a (block 1), a-b-b-a-a-b (block 2), b-a-b-a-b-b (block 3), and b-b-a-b-b-a (block 4). Thus, as block 2 demonstrated, attacks could also occur in direct succession, that is, without a "no-attack-question" in between.

Prevention measure. As a safeguard, in advance of each question the subjects had the possibility to protect the black stone they were about to collect by casting a "protection spell". If they decided to do so, they had to enter a code, which was displayed to them on the screen, backwards into a blank field. The code was a randomly generated string of 35 characters, arranged in a fixed sequence of numbers, lower case letters, and a dash (e.g., 4q43z6t7686242723950116-q9p1v5q888d). The codes differed with every question, but not with the subjects, that is, there was a fixed set of 24 codes that was the same for every subject.

Having the cast of a protection spell coming with the act of correctly entering a long and complex code, the protection of a black stone was supposed to require a considerable amount of effort (and time). An effort only those subjects with a strong prevention focus should be willing to invest repeatedly, due to their higher concern for protection and security. Therefore, the number of code inputs (i.e., number of decisions in favor of protecting a black

stone) served as the new measure of prevention focus, which is henceforth referred to as *Protection*.

To examine whether individuals are actually willing to enter a long and complex code to protect a black stone, a pretest ($N = 6$, 50% females, $M_{age} = 29.0$, $SD_{age} = 12.7$, range $18 - 54$ years) was carried out including 18 questions spread over three blocks. Here, the code even had a length of 45 characters. The results of the pretest revealed that the subjects indeed did enter some codes, however the average number of code inputs was 5.5 ($SD = 5.01$, range $1 - 15$ code inputs). Subjects were also given the possibility to express their thoughts regarding the game at the end of the pretest. Nearly all subjects found the code to be way too long. Thus, I decided to cut the code, but only by 10 characters, since it was essential for the code input to require a considerable amount of effort if it was to serve as a measure of prevention.

Having the subjects entering the code before a question (and thus before the collection of a black stone) and not in retrospect for that question (as it would resemble a "saving procedure" analogue to saving one's recent changes when working with a computer program) was decisive in order to rule out any impact of individual knowledge on the decision whether to protect a black stone or not. Since in that case subjects would have naturally tended to protect first and foremost after those questions where they felt their answers the most likely to be correct, such a retrospective protection would have severly biased the number of code inputs in a way not to be reversed by any kind of controlling procedure.

Playing time. In order to have the code input also being related to an investment of time, subjects were told that the time they need to work through a block would be registered and that in the end, after the completion of all four blocks, they will be given the chance to increase their potential prize money by €7 with correctly answering easy bonus questions if they manage to belong in at least three blocks to a so-called *Category of the Fast Players*. This category was introduced in the game rules alongside with the *Category of the Average Players* and the *Category of the Slow Players*, which altogether were purportedly determined

in a pre-test by splitting subjects' block times into thirds. However, as it was technically not possible to actually keep track of a subjects' block time during the game, such a categorization did never actually take place. It was sufficient to have the subjects believing in that time and thus playing speed will also be of some relevance so they would have to decide whether to either make losing a black stone to the goblin a rare event by casting lots of protection spells, or to rather go for the simple bonus questions and thus a likely €7 increase of potential prize money by quickly working through the blocks and seldomly if ever entering the time-consuming code. With this aspect, the capacity of the game to discriminate between stronger and weaker prevention-focused subjects was supposed to be further enhanced.

Probabilities. Also, as another factor contributing to the game's goal of measuring prevention, before each question the subjects were informed by the "Royal Institute for Goblin Research" about how likely it is that the goblin will show up after that question. This was done by displaying frequencies embedded into the message "Goblin probability: After this question the goblin usually shows up X out of 10 times" with X mainly ranging between 2 and 5, since frequency values beyond 5 (out of 10 times) would have been likely to make practically everyone protect the black stone thus rendering the code input as measure of prevention in these cases inconclusive. Hence, only moderate to small frequencies were chosen in order to make possible a somehow finer discrimination in the light of the assumption that subjects with a strong prevention focus might supposedly be more likely to protect a question even if the probability for an attack of the goblin is, relatively speaking, rather low (1 or 2 out of 10). The frequencies were randomly set and arranged a priori in a fixed sequence that was the same for every subject, only limitedly linked to the actual presence or absence of the goblin.

Technical implementation. The idea of the game was implemented using the online survey tool Unipark to program a single long sequence of pages. The sequence contained a

variety of filters and if-then functions to have it running in a certain order depending on the individual decisions a subject made.

Figure 1 shows the sequence of pages that accompanied a single question. Each grey box represents a single page.
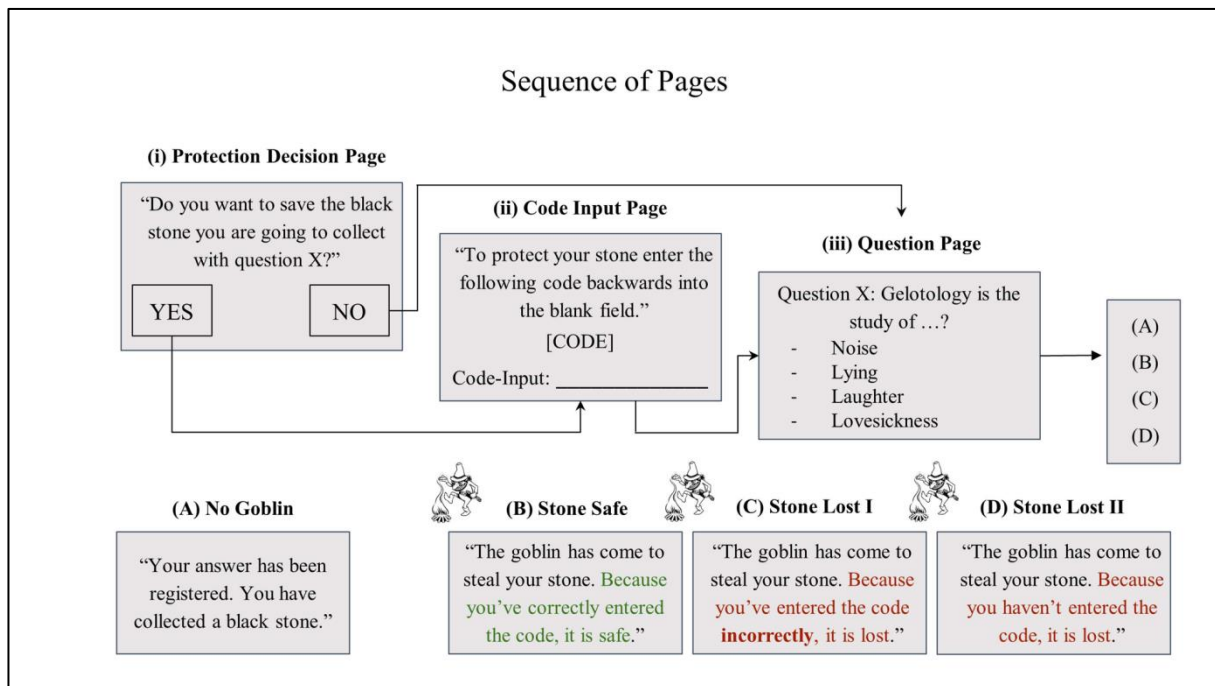

Figure 1. Sequence of pages that accompanied a single question

The subjects always began the page sequence of a question on the *Protection Decision Page* (cf. Figure 2 in APPENDIX E) where they were being asked whether they wanted to protect or not to protect the black stone they were about to collect for that question. If the subjects chose "YES", they were referred to the *Code Input Page* (cf. Figure 4 in APPENDIX E). Here they had to enter the randomly generated code backwards into a blank field in order to successfully cast a protection spell. After that, they reached the actual *Question Page* (cf. Figure 3 in APPENDIX E) where a question was displayed together with four possible response options from which only one was correct. If the subjects chose "NO" on the *Protection Decision Page*, they were directly referred to the *Question Page*, thus skipping the *Code Input Page*.

After an answer had been given, one of four possible feedback scenarios A, B, C, and D follow the *Question Page*, depending on whether there was an attack of the goblin or not. If there was no attack, subjects saw the *No Attack Page* (scenario A, cf. Figure 5A in APPENDIX E) where the feedback read "Your answer has been registered. You have collected a black stone.", displayed in a neutral, black color, shown together with the image of a black stone. If there was an attack, then the first part of the feedback always started with "The goblin is here! He has come to steal your stone.", but the second part depended on whether the subjects had entered the code correctly (scenario B: *Stone Safe Page*, cf. Figure 5B in APPENDIX E), incorrectly (scenario C: *Stone Lost Page I*, cf. Figure 5C in APPENDIX E), or had skipped the code input (scenario D: *Stone Lost Page II*, cf. Figure 5D in APPENDIX E). The feedback on the *Stone Safe Page* went on with "Because you've correctly entered the code before, your stone is safe and the goblin has to leave with empty hands.", colored green signifying prevention success. In contrast, the feedback on the *Stone Lost Page I* went on with "Though you've decided to safe your stone before, you've unfortunately entered the code incorrectly. Hence, the protection spell could not work and your stone is lost.", colored red signifying prevention failure. The feedback on the *Stone Lost Page II* went on with "Because you haven't protected your stone, it is lost.", also colored red signifying prevention failure.

Before the start of the game, subjects were presented the game rules including detailed instructions about what to do (cf. APPENDIX C). Then followed a series of questions labeled as "self-test" (cf. APPENDIX D) that served the purpose of a manipulation check to make sure the subjects did understand the game rules.

At the end of each block, the subjects were displayed on the *Water of Truth Page* (cf. Figure 7 in APPENDIX E) how many of the black stones they had collected in the recent block (six at maximum) turned white, together with the information about whether they

gained (or not gained) a mini chocolate bar (Promotion group) or lost (or not lost) a mini chocolate bar (Prevention group), respectively.

Additionally, the *Water of Truth Page* was always preceeded by the *Time Measurement Page* (cf. Figure 6 in APPENDIX E) where the subjects were informed that their block time had been registered, shown together with an individualized "time code" composed of subject id and block number to make the time measurement more credible. Also, there was a reminder saying "At the end of the game, you are going to be informed about whether you belong to the *Category of the Fast Players* in block X. If you managed to belong in at least three of four blocks to the *Category of the Fast Players*, you will be given the chance of a €7 increase of your potential prize money by answering easy bonus questions.".

At the end of the game, that is, after all four blocks had been completed, the subjects reached the *Time Measurement Results Page* – which looked just like the *Time Measurement Page* – where they received feedback about the (purported) measurement of their block times. For everyone it similarly read "You belong only in two of four blocks to the *Category of the Fast Players*. Hence, unfortunately you are not permitted to answer the easy bonus questions.".

After that, as last page of the game, subjects reached the *Additional Codes Page* (cf. Figure 8 in APPENDIX E). Here, they were confronted with a "royal message", delivered by an envoy, in which the king asked all his denizens for help in the struggle against the greedy goblin. With every additionally entered code casting another protection spell, the chance would increase that the goblin could be banished from the kingdom once and for all. Subjects could choose to enter zero up to four additional codes. The number of additional codes a subject entered was supposed to indicate the degree of a subject's involvement in the game and its background story and is henceforth referred to as *Involvement*.

Manipulation. Subjects in the Promotion group were told that if the bowl of a block contains three or more white stones, they instantly will be handed out by the experimenter a

mini chocolate bar worth €10 of potential prize money. This was supposed to create a gain/non-gain framing (win a mini chocolate bar or not), thereby inducing a situational promotion focus with a subject's focus directed to giving correct answers.

In contrast, subjects in the Prevention group started the game with four mini chocolate bars (one for each block) lying clearly visible in front of them on the table next to the keyboard. They were told that if the bowl of a block contains more than three black stones, the mini chocolate bar of that block will be instantly taken away from them by the experimenter. This was supposed to create a non-loss/loss framing (lose a mini chocolate bar or not), thereby inducing a situational prevention focus with a subject's focus directed to not giving false answers.

To render the function of the stones in effect comparable for both conditions, subjects in the Prevention group received a black "replacement stone" that could not turn white for every black stone the goblin had stolen from them. Thus it was avoided that subjects in the Prevention condition might not bother losing a stone to the goblin, since losing the black stone of a question would have meant losing a possible (to-be-approached) white stone inasmuch as it would have meant losing a possible (to-be-avoided) black stone. However, having the goblin taking away a possible black stone would have eventually turned out beneficial in the quest of avoiding to have black stones contained in the bowl. This is because an attack of the goblin indeed would have eliminated the possibility to get a white stone, but at the same time, by mere numerical properties, would have increased the chance to have not more than three black stones contained in the bowl.

External Measures

After the game, in the second part of the study, subjects were first asked to fill out demographic data including gender, age, education, employment, and mother tongue. Then they answered a 4-item scale I created myself (cf. APPENDIX B) to measure a subject's motivation regarding the game (7-point Likert scale ranging from 1 = "not at all" to 7 =

"extremely"). The four items were "How motivated were you to receive (i.e., protect from the goblin) all stones of a block?", "How motivated were you to answer all questions correctly?", "How much did you like the game overall?", and "How much would you like to play it again (with different questions)?". This scale is henceforth referred to as *Motivation*. High values indicate a high motivation.

Subsequently, the subjects filled out the German translation of the Regulatory Focus Questionnaire (RFQ; Higgins et al., 2001), the Work Regulatory Focus Scale (WRF; Neubert, Kacmar, Carlson, Chonko, & Roberts, 2008), and the Positive and Negative Affect Schedule (PANAS, Watson, Clark, & Tellegen, 1988; German version: Breyer & Bluemke, 2016). All the translated items of the questionnaires are listed in APPENDIX B.

The RFQ comprised 11 items (six items measuring prevention and five items measuring promotion), which had to be answered on a 5-point Likert scale ranging from 1 = "never" to 5 = "very often". Two of the 11 items had the endpoints 1 = "is not true at all" and 5 = "is absolutely true". Thus, high values indicate a strong promotion and prevention focus, respectively. Items of the RFQ were for example "How often have you accomplished things that got you 'psyched' to work even harder?" (Promotion) and "How often did you obey rules and regulations that were established by your parents?" (Prevention).

The WRF comprised 18 items (three 3-item subscales Security, Oughts, and Losses to measure prevention and three 3-item subscales Achievement, Ideals, and Gains to measure promotion), which had to be answered on a 5-point Likert scale ranging from 1 = "I do not agree at all" to 5 = "I totally agree". Thus, high values of WRF indicate a strong promotion and prevention focus, respectively. Items of the WRF were for example "If my job did not allow for advancement, I would likely find a new one" (Promotion, subscale Achievement) and "I concentrate on completing my work tasks correctly to increase my job security" (Prevention, subscale Security).

The PANAS comprised 20 items with ten items measuring positive affect (e.g., active, enthusiastic) and ten items measuring negative affect (e.g., distressed, nervous). Subjects had to state how they had felt during the last three days on a 5-point Likert scale ranging from 1 = "not at all" to 5 = "extremely". Thus, high values indicate strong positive and negative affect, respectively.

Procedure

The study took place on ten consecutive weekdays between 06/05/2019 and 17/05/2019 with up to six sessions per day in the social sciences laboratory of the University of Vienna. Per session, up to six subjects could be tested simultaneously. However, due to the regulatory focus framing requiring different set-ups (mini chocolate bars at the beginning present or not) and a different involvement of the experimenter (handing out vs. taking away mini chocolate bars) for the two conditions, all subjects of a session had to belong either to the Promotion or to the Prevention group.

The subjects were seated in front of a computer monitor to which a regular keyboard and a computer mouse were connected. After signing an informed consent and being briefly informed about what would happen during the experiment, the subjects started the study by their own with reading the game instructions. These were followed by a self-test in which the subjects could see for themselves whether they had understood all the main aspects of the game. This also served as a manipulation check. The duration of the game depended largely on the subjects' individual game behavior and was about 20 – 50 min. Afterwards, in the second part of the study, the subjects answered in a randomized order RFQ, WRF, PANAS, and the Motivation scale, before they were thanked and dismissed. In total, a session lasted approximately 30 – 60 min. A comprehensive debriefing was sent out to all subjects per e-mail after the end of data collection.

Data Analysis

Calculations were made using IBM SPSS Statistics (version 25). In a first step, the

data was tested for normality. For the main outcome variable *Protection* (i.e., number of code

inputs) a significant deviation from the normal distribution was found using the Shapiro-Wilk

test, $W(120) = 0.96$, $p < .01$. Values for *Protection* ($M_{Protection} = 9.06$, $SD_{Protection} = 5.37$) ranged

from 0 to 24, meaning there were some subjects that did not protect a single black stone (i.e.,

entered zero codes), while others protected every black stone (i.e., entered all 24 codes).

Reliability of *Protection* over the four blocks turned out high (Cronbach's $\alpha = .85$).

The values of the predictor variables *WRF Promotion*, *WRF Prevention*, *RFQ*

Promotion, *RFQ Prevention*, *Positive Affect* (ten PANAS items measuring positive affect),

Negative Affect (ten PANAS items measuring negative affect), and *Motivation* were

calculated by taking the mean of a subject's total score in the respective measures.

Involvement was represented by the number of codes additionally entered at the end of the

game. *PPM* (*Potential Prize Money*) is supposed to reflect success in the game. Table 1 shows

the psychometric properties of the main study variables used as predictors of *Protection*.

Table 1

Psychometric Properties of the Predictor Variables

Variable	*M*	*SD*	α	Range Potential	Actual	Skew
WRF Prevention	3.77	0.66	.84	1—5	1.8—5.0	-0.52
WRF Promotion	3.47	0.71	.82	1—5	1.3—5.0	-0.37
RFQ Prevention	3.13	0.75	.69	1—5	1.2—4.8	-0.29
RFQ Promotion	3.46	0.71	.75	1—5	1.3—5.0	-0.23
Positive Affect	3.06	0.70	.88	1—5	1.0—4.6	-0.12
Negative Affect	2.22	0.73	.87	1—5	1.0—4.4	0.84
Motivation	5.09	1.25	.72	1—7	1.8—7.0	-0.62
Involvement[a]	2.68	1.46		0—4	0—4	-0.65
PPM	14.25	10.51		0—40	0—40	0.49

Note. $N = 120$. PPM = Potential Prize Money, [a] Reliability of Involvement cannot be reported as it is a single item

Results

Comparing Promotion Group and Prevention Group

To test the first hypothesis H_1, I conducted a Mann-Whitney U-test to compare the two experimental groups, Promotion and Prevention, regarding *Protection*. I assumed that in a non-loss/loss condition (Prevention group), subjects are more likely to protect a black stone by entering the code than in a gain/non-gain condition (Promotion group). Thus, given the manipulation of regulatory focus worked, I expected a higher mean value of *Protection* (i.e., a higher number of code inputs on average) in the Prevention group than in the Promotion group. However, the average number of code inputs turned out to be very much the same in both groups (*Protection*: $M_{Prevention} = 9.09$, $SD_{Prevention} = 5.00$; $M_{Promotion} = 9.03$, $SD_{Promotion} = 5.73$), $U(n_{Prevention} = 58, n_{Promotion} = 62) = 1.787$, $z = -0.06$, $p = .95$.

Correlation with External Measures

To test the hypotheses H_{2a} and H_{2b}, I first conducted a correlation analysis with the outcome variable *Protection* and the predictor variables *WRF Promotion*, *WRF Prevention*, *RFQ Promotion*, *RFQ Prevention*, *Involvement*, *Motivation*, and *PPM*. I assumed there will be a positive correlation between the prevention measure contained in the game (i.e., *Protection*) and the prevention scales of WRF and RFQ. Thus, I expected a significant positive correlation between *Protection* and *RFQ Prevention* (H_{2a}), as well as between *Protection* and *WRF Prevention* (H_{2b}). Table 2 on the next page shows the Pearson correlation matrix for the main study variables.

Table 2

Pearson Correlation Matrix for the Main Study Variables

	1	2	3	4	5	6	7	8	9
1. Protection									
2. WRF Prevention	.22*								
3. WRF Promotion	-.04	.25**							
4. RFQ Prevention	.01	.38**	.03						
5. RFQ Promotion	.02	.03	.36**	-.01					
6. Positive Affect	.05	.07	.27	.01	.43**				
7. Negative Affect	.17	.06	-.12	-.06	-.40**	-.10			
8. Involvement	.18	.05	-.05	.03	.06	.02	-.05		
9. Motivation	.32**	.29**	.07	.11	.10	.13	-.001	.36**	
10. PPM	.15	-.07	.15	-.16	.05	.03	-.03	-.01	.23*

Note. N = 120, PPM = Potential Prize Money, * *p* < .05, ** *p* < .01

As Table 2 shows, there is a significant positive correlation between *Protection* and *WRF Prevention*, *r*(120) = .22, *p* < .05, but not between *Protection* and *RFQ Prevention*, *r*(120) = .01, *p* = .90.

In addition, I conducted a correlation analysis with *Protection* and the WRF subscales *Security*, *Oughts*, *Losses* (together measuring Prevention) and *Achievement*, *Ideals*, *Gains* (together measuring Promotion) in order to examine whether the subscales might differ in the strength of their correlation with *Protection*. The results are displayed in Table 3 on the next page.

Table 3

Pearson Correlation Matrix for Protection and the WRF Subscales

	1	2	3	4	5	6
1. Protection						
2. Security	.26**					
3. Oughts	.13	.47**				
4. Losses	.14	.59**	.36**			
5. Achievement	.04	.12	.29**	.27**		
6. Ideals	.06	.27**	.31**	.28**	.47**	
7. Gains[a]	-.18	-.15	.09	.01	.39**	.29**

Note. $N = 120$, * $p < .05$, ** $p < .01$, [a] The negative correlation between *Gains* and *Protection* is almost significant ($p = .053$)

As Table 3 shows, *Protection* correlates significantly with the WRF subscale *Security*, $r(120) = .26$, $p < .01$, and almost significantly with the WRF subscale *Gains*, $r(120) = -.18$, $p = .053$.

I further conducted three linear multiple regression analyses to examine whether the main outcome variable *Protection* can be predicted significantly when all the other study variables are taken into account. For this, all predictor variables were mean centered. The first regression analysis aimed at predicting *Protection* using *WRF Prevention*, *WRF Promotion*, *Positive Affect*, *Negative Affect*, *Motivation*, *Involvement*, and *PPM* (see Table 4 on the next page). The second regression analysis aimed at predicting *Protection* using *RFQ Prevention*, *RFQ Promotion*, *Positive Affect*, *Negative Affect*, *Motivation*, *Involvement*, and *PPM* (see Table 5 on the next page). And the third regression analysis aimed at predicting *Protection* using the WRF subscales *Security*, *Oughts*, *Losses*, *Achievement*, *Ideals*, *Gains*, as well as *Motivation*, *Involvement*, and *PPM* (see Table 6 on the next page but one).

Table 4

Predicting Protection Using WRF

Variable	*B*	*SE B*	β
Constant	9.06**	0.46	
WRF Prevention	1.50	0.77	.19[a]
WRF Promotion	-0.84	0.71	-.11
Positive Affect	0.40	0.70	.05
Negative Affect	1.15	0.64	.16[b]
Involvement	0.36	0.34	.10
Motivation	0.86	0.44	.20[c]
PPM	0.07	0.05	.14
R^2		.18	
F		3.41**	

Note. PPM = Potential Prize Money, ** $p < .01$, [a] $p = .053$, [b] $p = .076$, [c] $p = .052$

As Table 4 shows, the chosen predictors explain a significant amount of variance in Protection, $F(7,112) = 3.41$, $p < .01$, $R^2 = .18$, $R^2_{adjusted} = .12$. *WRF Prevention* is close to be a significant predictor of *Protection,* β $= .19$, $p = .053$, and so are *Negative Affect*, β $= .16$, $p = .076$, and *Motivation*, β $= .20$, $p = .052$.

Table 5

Predicting Protection Using RFQ

Variable	*B*	*SE B*	β
Constant	8.85**	2.10	
RFQ Prevention	0.21	2.01	.01
RFQ Promotion	0.48	0.80	.06
Positive Affect	0.04	0.75	.01
Negative Affect	1.47	0.71	.20*
Involvement	0.33	0.35	.10
Motivation	1.10	0.43	.26*
PPM	0.05	0.05	.10
R^2		.15	
F		2.76*	

Note. PPM = Potential Prize Money; * $p < .05$, ** $p < .01$

As Table 5 shows, the chosen predictors explain a significant amount of variance in *Protection*, $F(7,112) = 2.76$, $p < .01$, $R^2 = .15$, $R^2_{adjusted} = .09$. However, *RFQ Prevention*, $\beta = .01$, $p = .92$, by far is not a significant predictor of *Protection*, but only *Negative Affect*, $\beta = .20$, $p < .05$, and *Motivation*, $\beta = .26$, $p < .05$, are.

Table 6

Predicting Protection Using WRF Subscales

Variable	B	SE B	β
Constant	9.06**	0.45	
Security	1.57	0.70	.26*
Oughts	-0.39	0.79	-.05
Losses	-0.66	0.70	-.10
Achievement	0.42	0.63	.07
Ideals	0.33	0.62	.05
Gains	-1.13	0.53	-.21*
Involvement	0.37	0.34	.10
Motivation	1.10	0.43	.26*
PPM	0.07	0.05	.13
R^2		.21	
F		3.24**	

Note. PPM = Potential Prize Money; * $p < .05$, ** $p < .01$

As Table 6 shows, again the chosen predictors explain a significant amount of variance in *Protection*, $F(7,112) = 3.24$, $p < .01$, $R^2 = .21$, $R^2_{adjusted} = .15$, which is significantly predicted by *Security*, $\beta = .26$, $p < .05$, and *Gains*, $\beta = -.21$, $p < .05$.

Additional Analyses

In further analyses, I explored whether a subject's individual behavior in the game might be better and more precisely accounted for when the data set is changed from a wide to a narrow format, now having 24 measurements per subject (since there were 24 questions and protection decisions) and thus 2.880 (24 x 120 subjects) measurement points in total, which provides an increased reliability.

After having the data set transponed this way, I assumed to find answers to several key questions, such as: How did the subjects react to an attack of the goblin? Were the subjects more likely to protect a question when they just recently had lost a stone to the goblin? Did the subjects react to the probability values? Did it matter for a subject's protection decision whether, in the case of an attack of the goblin, the consequence of the recent question was either prevention success (stone safe due to correct code input) or prevention failure (stone lost due to incorrect or skipped code input)? And, most importantly, was there perhaps a difference between the groups, not in how often, but in when and in reaction to which events a black stone was protected?

Following this exploratory path, I conducted a generalized estimating equation (GEE) choosing a binary logistic model with *Protection* as binary dependent variable (0 = no code input, 1 = code input) and subject id as subject variable. As predictors served the variables *Group* (Promotion = 1, Prevention = 2), *Recent Attack* (0 = no attack after the recent question, 1 = attack after the recent question), and the recent *Attack Consequence* (0 = no attack, 1 = stone safe due to correct code input, 2 = stone lost due to incorrect code input, 3 = stone lost due to skipped code input), which were entered into the model as factors, as well as the variables *Probability* (representing X in "After this question, the goblin usually shows up X out of 10 times", range 1 – 5), *WRF Prevention*, *WRF Promotion*, *RFQ Prevention*, *RFQ Promotion*, *Motivation*, *Involvement*, and *PPM*, which all were entered in the model as covariates. Also, the interaction between *Probability* and *Group* was entered into the model to examine whether subjects in the Prevention group might have protected at lower probabilities than subjects in the Promotion group. However, the interaction was not significant, $W(4) = 3.33$, $p = .504$.

Table 7 on the next page displays the parameter estimators of the model. For the clarity of presentation, in addition to the p-values, significant values are marked with asteriks.

Table 7

Parameter Estimators for Protection as Outcome Variable

	B	SE B	W	p
Constant	-4.40	.28	233.15**	.000
Group	-0.11	.21	0.27	.605
Recent Attack	0.67	.16	17.94**	.000
Attack Consequence [= 0]	0[a]	-	-	-
Attack Consequence [= 1]	0.85[a]	.24	12.31**	.000
Attack Consequence [= 2]	0.39	.38	1.09	.297
Attack Consequence [= 3]	0[a]	-	-	-
Probability	1.07	.07	219.33**	.000
WRF Prevention	.43	.18	5.64*	.018
WRF Promotion	-.27	.15	3.16	.076
RFQ Prevention	-.11	.16	0.49	.485
RFQ Promotion	.16	.17	0.88	.347
Positive Affect	.05	.16	0.08	.774
Negative Affect	.29	.16	3.30	.069
Motivation	.18	.10	3.60	.058
Involvement	.09	.09	1.17	.279
PPM	.02	.01	1.94	.163

Note. PPM = Potential Prize Money; *Protection* = 1 (code input) was treated as answer, *Protection* = 0 (no code input) as reference category, [a] redundant parameter, * $p < .05$, ** $p < .01$

As can be seen in Table 7, the impact of *Group* failed to reach significance. However, *Recent Attack*, *Attack Consequence*, and *Probability* are significant predictors of *Protection*.

Estimated marginal means of *Recent Attack* revealed .44 ($SE = 0.05$) for the scenario "no recent attack" (*Recent Attack* = 0) and .28 ($SE = 0.03$) for "recent attack" (*Recent Attack* = 1). The mean difference was highly significant, $MD = 0.15$, $SE = 0.04$, $p < .01$.

Among the total of attack consequences *relevant for the subsequent game behavior* (i.e., 960 attack consequences, 120 subjects x 8 *relevant* attacks per subject, since the last of the 9 attacks followed the last question of the last block and had thus no more impact on the game behavior), subjects experienced prevention success in the form of "stone safe due to

correct code input" (*Attack Consequence* = 1) in 39.6% of the cases (380 times), prevention

failure in the form of "stone lost due to incorrect code input" (*Attack Consequence* = 2) in

8.2% of the cases (79 times), and prevention failure in the form of "stone lost due to skipped

code input" (*Attack Consequence* = 3) in 52.2% of the cases (501 times).

Estimated marginal means of *Attack Consequence* revealed .29 (*SE* = 0.02) for the

scenario "no attack" (*Attack Consequence* = 0), .49 (*SE* = 0.06) for "stone safe due to correct

code input", .38 (*SE* = 0.09) for "stone lost due to incorrect code input", and .29 (*SE* = 0.02)

for "stone lost due to skipped code input". The mean difference between "stone safe due to

correct code input" (*Attack Consequence* = 1) and "stone lost due to skipped code input"

(*Attack Consequence* = 3) was highly significant, *MD* = 0.20, *SE* = 0.06, *p* < .01.

With regard to the external measures of regulatory focus, only *WRF Prevention* turned

out to be a significant predictor of *Protection*, *W* = 5.64, *p* < .05. However, *WRF Promotion* is

marginally significant, *W* = 3.16, *p* = .075, in an expected negative manner (i.e., the stronger a

subject's promotion focus was, the less likely it was to protect a black stone). Though also not

significant, *Negative Affect*, *W* = 3.30, *p* = .069, and *Motivation*, *W* = 3.60, *p* = .058, yet play

an even more important role in this model.

Then I repeated the GEE with the only difference that now the WRF subscales

Security, *Oughts*, *Losses*, *Achievement*, *Ideals*, and *Gains* were separately included in the

model. With this, I aimed at examining the exact contribution of each subscale, and more

precisely, whether *Security* and *Gains* again might turn out significant in predicting

Protection, as they did in the third linear multiple regression analysis whose results are

displayed in Table 6.

Table 8 on the next page shows the results of the second GEE. Again, significant

values of *W* are additionally marked with asteriks.

Table 8

Parameter Estimators for Protection as Outcome Variable

	B	SE B	W	p
Constant	-4.48	.29	234.81**	.000
Group	-0.09	.22	0.15	.697
Recent Attack	0.64	.16	17.01**	.000
Attack Consequence [= 0]	0[a]	-	-	-
Attack Consequence [= 1]	0.81	.24	11.47**	.001
Attack Consequence [= 2]	0.34	.38	0.82	.364
Attack Consequence [= 3]	0[a]	-	-	-
Probability	1.10	0.07	230.95**	.000
Security	0.45	.15	8.58**	.003
Oughts	-0.07	.17	0.14	.704
Losses	-0.17	.15	1.31	.253
Achievement	0.09	.13	0.46	.498
Ideals	0.01	.13	0.01	.935
Gains	-0.26	.16	2.48	.115
RFQ Prevention	-0.12	.15	0.63	.428
RFQ Promotion	0.17	.17	0.99	.319
Positive Affect	0.03	.16	0.03	.864
Negative Affect	0.25	.15	2.78	.096
Involvement	0.10	.08	1.51	.219
Motivation	0.24	.10	5.33*	.021
PPM	0.01	.01	1.63	.202

Note. PPM = Potential Prize Money; *Protection* = 1 (code input) was treated as answer, *Protection* = 0 (no code input) as reference category, [a] redundant parameter, * $p < .05$, ** $p < .01$

As Table 8 shows, among the WRF subscales, only *Security* is a significant predictor of *Protection*, $W = 8.58$, $p < .01$, while *Gains* is in the widest sense marginally significant, $W = 2.48$, $p = .115$. Also, again *Motivation*, $W = 5.33$, $p < .05$, and *Negative Affect*, $W = 2.78$, $p = .096$, are of relevance in this model. For the variables *Recent Attack*, *Attack Consequence*, and *Probability*, the calculations and inferences were the same as those made above on the basis of Table 7.

Lastly, I conducted another correlation analysis including RFQ and the subscales of WRF (see Table 9 on the next page) in order to possibly find evidence why in the GEE *WRF Prevention* and the subscale *Security* significantly, and *WRF Promotion* marginally significantly, predict *Protection*, but none of the RFQ scales does. I supposed that a weak or unexpected correlation between one or more facets of the WRF and the RFQ scales would point to theoretical limitations of sorts in the latter.

Table 9

Pearson Correlation Matrix for RFQ and the WRF subscales

	1	2	3	4	5	6	7
1. RFQ Prevention							
2. RFQ Promotion	-.01						
3. Security	.34**	-.01					
4. Oughts	.23*	.10	.47**				
5. Losses	.33**	.01	.59**	.36**			
6. Achievement	-.01	.25**	.12	.29**	.27**		
7. Ideals	.16[a]	.22*	.27**	.31**	.28**	.47**	
8. Gains	-.08	.35**	-.15	.09	.01	.39**	.29**

Note. $N = 120$, * $p < .05$, ** $p < .01$, [a] marginally significant ($p = .088$)

As can be seen in Table 9, the WRF subscales correlate moderately to strongly with the RFQ scales in the expected manner with *RFQ Promotion* being related to the promotion subscales *Achievement*, *Ideals*, and *Gains*, and with *RFQ Prevention* being related to the prevention subscales *Security*, *Oughts*, and *Losses*. In addition however, *RFQ Prevention* shows a marginally significant correlation with the promotion-related facet *Ideals* of the WRF, $r(120) = .16$, $p = .088$.

Discussion

The goal of the study was to find and develop a new measure of an individual's prevention focus that is based on actual behavior instead of self-report and introspection, for hitherto established (self-report) measures of regulatory focus lack in validity and have found to be theoretically inconsistent (Summerville & Roese, 2008; Haws, Dholakia, & Bearden, 2010).

Since the interest of research in Regulatory Focus Theory has been growing rapidly over the last decades, being able to measure an individual's regulatory focus validly and accurately is an indispensible prerequisite when valid conclusions are to be drawn about motivation and behavior using the concept of promotion and prevention focus. Having the new measure being a *behavioral* measure was supposed to increase objectivity and thus also validity and accuracy in measuring prevention.

The new behavorial measure of prevention was part of a quiz game subjects played on a computer. With every answered question, subjects collected an (imaginary) black stone, which later turned white if the given answer to a question was correct. Having collected enough white stones made the subjects gain an amount of potential prize money that later could be won in a lottery. During the game the subjects were permanently in danger of being attacked by a "greedy goblin" that appeared at random intervals to steal a just collected black stone. To avoid losing a black stone to the goblin, the subjects could decide to protect it by entering a long and complex code backwards into a blank field. Thus, protecting a black stone was a relatively effortful act. How many times a subject entered a code formed the main outcome variable *Protection* which served as the new behavioral measure of prevention, as it thus closely resembled one of the chief characteristics of prevention focus: being concerned with security and protection while avoiding losses and approaching non-losses (Higgins, 1997).

Manipulation of Regulatory Focus

To validate the new measure of prevention, two different approaches were taken. The first approach implied a manipulation of regulatory focus: The subjects were randomly assigned to either a promotion condition, where they received a gain/non-gain framing, or a prevention condition, where they received a non-loss/loss framing. The framing was supposed to situationally induce a promotion and a prevention focus, respectively.

I expected subjects in the prevention condition to be more inclined to protect a black stone against the goblin by entering the code than subjects in the promotion condition (H_1). However, this was not the case. In both groups, the number of code inputs, representing the main outcome variable *Protection*, was very much the same. Thus, either was the game and its prevention measure not sensitive enough to detect an existing difference in regulatory focus induced by the manipulation (explanation A), or the manipulation as such was not strong enough to induce a difference in the subjects' regulatory focus (explanation B). However, the manipulation of regulatory focus implied a carefully considered phrasing and illustration of the instructions and contents of the game with respect to the peculiarities of promotion and prevention. Also, subjects "physically" experienced loss/non-loss events (i.e., a mini chocolate bar was taken away or not) and gain/non-gain events (i.e., a mini chocolate bar was handed out or not), respectively. Thus, it is likely explanation A to be true, that is, that there was no significant difference between groups because the mere number of code inputs as measure of prevention was not sensitive enough to detect such a difference in regulatory focus.

To sum up, the first approach to validate the game yielded two experimental groups that did not differ in how often on average they entered the code to protect a black stone. Thus, in the light of this finding, and given the manipulation worked and induced promotion and prevention according to the respective framing, the game appears to be unsuitable for measuring prevention, at least when the mere number of code inputs is considered.

Correlation with External Measures

The second approach implied predicting *Protection* by using the external measures of regulatory focus RFQ and WRF, while controlling for motivation, involvement, and affect. I expected a significant positive correlation between *Protection* and the self-report measures RFQ (H_{2a}) and WRF (H_{2b}), respectively.

Contrary to what the lack of support for H_1 possibly had made one expecting, testing H_2 indeed yielded evidence in favor of the game as a suitable measure of prevention. However, the results were ambiguous. Linear multiple regression analyses revealed a strong discrepancy between RFQ and WRF regarding each one's value in predicting *Protection*. While neither the prevention nor the promotion scale of the RFQ turned out to be significantly correlated with *Protection*, the prevention scale of the WRF did.

This might be in part due to the biases the RFQ have been found to possess. Yet this does not fully explain why only *WRF Prevention* and not also *RFQ Prevention* showed a significant correlation with *Protection*. Analyzing the correlation between the RFQ and the WRF subscales did not provide enough valuable information about a purported superiority of the WRF scales over the RFQ scales in measuring regulatory focus, even though the prevention scale of the RFQ surprisingly showed a marginally significant correlation with the WRF promotion subscale *Ideals*. However, looking more closely at the item structure of the two questionnaires not only reveals a much better internal consistency for the WRF ($\alpha = .82$ and .84 for the WRF vs. $\alpha = .69$ and .75 for the RFQ), but also gives one the impression that, compared to the RFQ, which is mainly built around the self-guide definition of regulatory focus (Summerville & Roese, 2008), the composition of the WRF with its three subscales – Security/Achievement, Oughts/Ideals, Losses/Gains – provides a much more solid and balanced "conceptual footing", since they represent the three most essential characteristics of regulatory focus. Also, a work context as referred to in the WRF might be something concrete and practical a subject is better able to handle and relate to than the much more general and

vague life context the RFQ items address. Hence, the WRF is likely to outperform the RFQ in terms of validity and accuracy.

Further elaborating the correlation between the WRF and *Protection* revealed that among the prevention subscales only *Security* is a significant predictor of how often a subject entered the code. This is not surprising as with protecting a black stone comes along the desire to have it safe and secured from the goblin. Interestingly, the promotion subscale *Gains* also significantly predicted *Protection*, but in a reversed manner, that is, the higher subjects scored in *Gains*, the less often they protected a black stone. A finding that is in accordance to what Regulatory Focus Theory implies, for success in the game was a matter of not losing vs. losing a black stone to the goblin (non-loss/loss) and not a matter of gain/non-gain (Higgins, 1997). Yet it remains open why *Losses* did not also turned out to be significant.

Not surprisingly, *Motivation* and *Negative Affect* were of relevance in predicting *Protection*. While a high motivation undoubtedly can soften the behavior-altering impact of the struggle the input of a long and complex code generally provokes, being in a bad mood might have made subjects more susceptible to the threat posed by the goblin, hence being more concerned with avoiding the negative experience of losing a black stone, which is likely to have caused the correlation between *Negative Affect* and *Protection*.

Additional Analyses

Another interesting findings were born out of the additional analyses. Calculating GEE to explore behavior in the course of the game revealed that subjects were less likely to protect a black stone when they just had experienced an attack, although attacks could occur in direct succession. A finding that is in accordance to what the bomb crater effect would predict.

Considering the kind of consequence an attack had for the subjects, protecting a black stone was the less likely when the recent attack consequence was prevention failure (i.e., stone lost to the goblin due to skipped code input) and was the most likely when the recent attack consequence was prevention success. Thus, the subjects seemed to be motivated by a

successful act of protection. Since the mean difference between the two attack consequences "stone safe due to correct code input" and "stone lost due to skipped code input" turned out highly significant, and given first the high number of possible combinations of attack consequences among the subjects ($3^8 = 6,561$; 3 possible attack consequences, 8 relevant attacks) and second the fact that only very few subjects protected every single question, it seems unlikely that this finding is because subjects protected anyhow in a consistent manner being influenced (exclusively) by other factors than prevention success.

Also, the subjects reacted strongly to the probabilities, meaning that the protection of a black stone was less likely, the lower the probability value was. However, there was no interaction with group, that is, a prevention framing did not make subjects being more inclined to protect at low probability values.

Limitations and Future Research

Before the key findings of the study eventually are used to derive a conclusion regarding the primary research goal of finding a new measure of prevention, it seems meaningful to briefly review some of the limitations of the study.

First, the prize money was only a *potential* prize money. Subjects might have acted differently if they had known there was the chance to be handed out actual money right at the end of their session.

Second, various important parameters of the game – such as the kind of questions, the number of questions, the number of questions per block, the probability values, the number and sequence of the goblin's attacks, the 35 characters long code as effort requiring act of protection, the entire speed issue, the purported chance of a € 7 increase of PPM if one belonged to the category of the fast players – were determined rather arbitrarily without being able to rely on any previous experience regarding the effect that a certain decision in favor of putting it a particular way and not another possibly can have on the subjects' behavior in the game.

For instance, the code might have been too long and too complex. Consequently, the average number of codes the subjects entered was roughly above nine which is only about 37.5% of the maximum possible number of code inputs. Also, the purported measurement of block times might have somewhat urged the subjects in both conditions to play rather fast (instead of accurate), which then is likely to have counteracted the intended prevention framing for subjects in the Prevention group.

Another difficult decision that had to be made when creating the game was how the goblin's attacks and the probability values are best coordinated so that on the one hand the attacks appear truly random but on the other hand the probabilities "justify their existence" by sometimes truthfully estimate the likelihood of an attack (e.g., an attack following the highest probability value "5 out of 10 times").

To pinpoint the presumed main limitation of the game: The arrangement of attacks and probabiliy values I eventually settled with as well as various other decisions I took with regard to the structure of the game were in effect grounded on a great deal of personal intuition about what could possibly make the most sense instead of previous experience, let alone empirically tested hard facts.

Yet the game in its current structure appears to be suitable for measuring prevention, as a brief review of its test quality criteria indicates. First, the main outcome variable *Protection* correlates with *WRF Prevention* and especially with the prevention facet *Security*, but not with *WRF Promotion*. This finding indicates both high discriminative and convergent validity of the game. Second, the reliability of *Protection* over the four blocks turned out high (Cronbach's $\alpha = .85$). And third, since *Protection* represents the number of code inputs a subject carried out and thus is a quantitative measure of a subject's inclination to protect versus not protect, the game is also high in objectivity. Eventually, what further fosters the suitability of the game for measuring a subject's prevention focus is that exerting an act of prevention required actual behavior (i.e., entering a code) towards a goal, that is, the non-loss

of a black stone, which is in accordance with the original conceptualization of prevention

focus (Higgins, 1997).

However, an alternative attempt to measure prevention (even more indirectly) on the

basis of behavior by the means of a game could take on the following form:

Subjects work on a simple task (simpler than answering difficult quiz questions, e.g.,

filling in words in a text, connecting numbers, coding figures). Instead of collecting any kind

of unit or entity (e.g., points, stars, black stones), progress is all that matters. During the game,

there are random crashes that cause the loss of all progress a subject so far has made in

working on the task, unless it has saved the status quo (in the sense of a game score) before.

To save a status quo (i.e., to approach a non-loss), a subject has to quit the task to exert an act

of saving that requires some amount of effort just like the input of a long and complex code

does. The goal of the game is to get as far as possible with the task. Consequently, the key

assumption would be that the more often a subject decides to save a status quo, the stronger is

its prevention focus.

Future research needs to clarify whether the proposed new measure of prevention is

indeed better able to predict behavior than the traditional self-report measures of regulatory

focus are.

Conclusion

The present study contributed to research on motivation and goal-setting by

introducing a new and more objective way of measuring an individual's prevention focus,

especially the tendency to protect and secure a status quo. It further demonstrated that also a

prevention focus implies active behavior towards a goal, thereby distinguishing itself clearly

from avoidance behavior (Carver & White, 1994).

Following this line of research, a considerably more valid, behavioral measure of

prevention seems to be within reach, as long as promotion and prevention are treated as two

separate, co-existing systems (Higgins, 1997, 2000; Haws, Dholakia, & Bearden, 2010),

carefully accounting for their distinct conceptual nature. The findings also suggest that

research might benefit from having specific measures for the different facets of promotion and

prevention focus, as they might not always be neither equally strong related to each other nor

to a single concept of promotion and prevention.

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APPENDIX A

Quiz Questions (correct answers are bold)

Block 1

1. Welches chemische Element macht mehr als die Hälfte der Masse eines menschlichen Körpers aus?

— Eisen, Kohlenstoff, Kalzium, **Sauerstoff**

2. Wie heißen die Anzüge, mit deren Hilfe Menschen ohne Fallschirm durch die Luft segeln können?

— Airsuit, Flysuit, **Wingsuit**, Birdsuit

3. Als 1886 die Freiheitsstatue vor New York aufgestellt wurde, war sie …?

— **nicht grün, sondern braunrot**, barfuß und halbnackt, nur halb so groß wie heute, eindeutig männlich

4. Welche Bedeutung steckt hinter dem Begriff „Olympiade"?

— **ein Abstand von vier Jahren**, ein Wettkämpfer, eine Sportart, der griechische Begriff für „Berg"

5. Welche der folgenden Erkenntnisse gehört nicht zu den großen drei Kränkungen, die die Menschheit laut Sigmund Freud erdulden musste?

— **Die Lebenszeit des Menschen ist begrenzt**, Der Mensch stammt vom Tier ab, Der Mensch wird von unbewussten Trieben gesteuert, Die Erde steht nicht im Mittelpunkt des Weltalls

6. Wie heißt die Hauptstadt von Nicaragua?

— Montevideo, Lima, **Managua**, San José

Block 2

1. Welcher Staat hält mit insgesamt über 22.000 Kilometern Landgrenze zu seinen Nachbarstaaten den „Weltrekord"?

— **China**, USA, Brasilien, Russland

2. Die erste Pizza Margherita …?

— **bestellte die Frau von König Umberto I.**,war mit Margaritenblüten dekoriert, war mit Perlmuscheln belegt, wurde Besuchern der italienischen Stadt Margherita aufgetischt

3. Glaubt man Apollo-Astronauten, die auf dem Mond waren, so riecht Mondstaub nach …?

— Pfefferminze, Käsefüßen, Glasreiniger, **Schießpulver**

4. Welche Musikrevolutionäre wären in der Londoner Brook Street Nachbarn gewesen, hätten sie zur selben Zeit gelebt?

— Lehár und Lennon, Mozart und Madonna, Beethoven und Bowie, **Händel und Hendrix**

5. Was erforschen Gelotologen?

— Lärm, Lügen, **Lachen**, Liebeskummer

6. In welchem Wirtschaftsbereich arbeiten weltweit die meisten Menschen?

— **Landwirtschaft**, Gesundheitswesen, Bank- und Versicherungswesen, IT-Branche

Block 3

1. Welches ist das flächenmäßig größte Land der Europäischen Union?

— Spanien, **Frankreich**, Polen, Deutschland

2. Der US-Amerikaner Ignacio Marc Asperas …?

— **Ließ sich einen Schneemann-Bauplan patentieren**, entdeckte Schneekristalle, überlebte einen Sturz in Neuschnee aus 60 Meter Höhe, erfand mehr als 200 verschiedene Wörter für Schnee

3. Wer soll vor seinem Tod die Worte gesprochen haben: „Ich habe mich an Gott und der Menschheit vergangen, denn mein Werk ist nicht so gut geworden, wie es sollte.“?

— Ludwig van Beethoven**, Leonardo da Vinci**, Heinrich Heine, William Shakespeare

4. Bevor die New Yorker Feuerwehr motorisiert unterwegs war, musste sie per Pferdekutsche zum Brandort fahren. Als „Sirenen" dienten dabei …?

— Trompeten, Kuhglocken, **Dalmatiner**, Blechtrommeln

5. Wie wurde im Jahr 1902 in Deutschland die Einführung der Sektsteuer begründet?

— Sekt galt als Luxugut, zur Eindämmung des Alkoholkonsums, zur Unterstützung des Weinbaus, **zur Finanzierung der kaiserlichen Kriegsflotte**

6. Im Jahr 1807 wurde in Leipzig ein Verleger geboren, der seinen Lesern für wenig Geld Klassiker zugänglich machte. Von wem ist die Rede?

— **Anton Philipp Reclam**, Friedrich Arnold Brockhaus, Samuel Fischer, Joseph Meyer

Block 4

1. Welches Ereignis in Tunesien im Dezember 2010 gilt als Auftakt des „Arabischen Frühlings"?

— Erstürmung der staatlichen Fernsehanstalt durch Demonstranten, Aufdeckung massiver Wahlfälschungen im Vorfeld der Präsidentenwahl, Über Facebook organisierter Flashmob in Tunis, **Selbstverbrennung eines Gemüsehändlers infolge von Polizeiwillkür**

2. Im Jahr 2012 feierte die Quizshow „Wer wird Millionär" großes Jubiläum. Was war bis dato in 1.000 Sendungen am häufigsten die richtige Antwort?

— Blau, Goethe, **Spanien**, Angela Merkel

3. Wer „Nephelococcygia" praktiziert, der …?

— **sucht in den Wolken nach Formen**, schläft mit geöffneten Augen, zerbricht Glas mit der Kraft der eigenen Stimme, schwimmt in eiskaltem Wasser

4. Einen Chinesen, vier Inder und 15 US-Amerikaner fand man 2016 in der Forbes-Liste der 20 bestbezahlten …?

— Sportler, Popsänger, **Schauspieler**, Schriftsteller

5. Der Cocktail-Party-Effekt bezeichnet …?

— ein sozialpsychologisches Phänomen, eine Form des Tinnitus, **eine besondere Fähigkeit des menschlichen Gehörs**, einen Wahrnehmungsfehler

6. Ein weit verbreiteter Irrglaube geht davon aus, es befände sich …?

— Orangensaft in der Orange, **Kokosmilch in der Kokosnuss**, Olivenöl in der Olive, Koffein in der Kaffeebohne

APPENDIX B

Questionnaires

Work Regulatory Focus Scale (WRF)

Die folgenden Items beziehen sich auf den Arbeitskontext.

Wähle für jede der folgenden 18 Aussagen aus, wie sehr sie auf dich zutrifft.

Wenn du noch nie gearbeitet hast (d.h. erwerbstätig gewesen bist), versuche dir vorzustellen, wie eine Aussage auf dich im Arbeitskontext am ehesten zutreffen *könnte* oder denke an eine andere Art von Arbeit, die du geleistet hast (z.B. für das Studium).

	stimme überhaupt nicht zu	stimme eher nicht zu	stimme teilweise zu, teilweise nicht	stimme eher zu	stimme voll und ganz zu
1. Ich konzentriere mich darauf, meine Arbeitsaufgaben korrekt zu erledigen, um meine Arbeitsplatzsicherheit zu erhöhen.	○	○	○	○	○
2. Bei der Arbeit liegt der Fokus meiner Aufmerksamkeit darauf, die mir zugewiesenen Aufgaben zu erfüllen.	○	○	○	○	○
3. Die Erfüllung meiner Arbeitsaufgaben ist sehr wichtig für mich.	○	○	○	○	○
4. Bei der Arbeit strebe ich danach, den Verpflichtungen und Aufgaben, die mir Andere übertragen, nachzukommen.	○	○	○	○	○
5. Bei der Arbeit bin ich oft darauf fokussiert, Aufgaben zu erfüllen, die mein Bedürfnis nach Sicherheit unterstützen werden.	○	○	○	○	○
6. Ich tue alles, was ich kann, um bei der Arbeit einen Verlust zu vermeiden.	○	○	○	○	○
7. Arbeitsplatzsicherheit spielt für mich eine wichtige Rolle bei der Jobsuche.	○	○	○	○	○
8. Bei der Arbeit bin ich darauf fokussiert, Misserfolge zu vermeiden.	○	○	○	○	○

9. Ich bin sehr darauf bedacht zu vermeiden, mich bei der Arbeit der Gefahr möglicher Verluste auszusetzen.

10. Bei der Arbeit bin ich bereit, Risiken einzugehen, um meine Aufstiegsmöglichkeiten zu maximieren.

11. Bei der Arbeit neige ich dazu, Risiken einzugehen, um Erfolge zu erzielen.

12. Wenn ich die Chance hätte, an einem risikoreichen, aber vielversprechenden Projekt teilzunehmen, würde ich in jedem Fall zusagen.

13. Gäbe es in meinem Job keine Aufstiegsmöglichkeiten, würde ich mir höchstwahrscheinlich einen neuen suchen.

14. Die Chance auf persönliches Wachstum ist für mich ein wichtiger Faktor, wenn ich nach einem Job suche.

15. Ich bin darauf fokussiert, Arbeitsaufgaben zu erfüllen, die meine Weiterentwicklung vorantreiben.

16. Ich verbringe einer großen Teil meiner Zeit damit, mir vorzustellen, wie ich meine Wünsche erfüllen kann.

17. Bei der Arbeit sind meine Prioritäten von einer klaren Vorstellung dessen beeinflusst, was ich anstrebe zu sein.

18. Bei der Arbeit motivieren mich meine Hoffnungen und Ambitionen.

Regulatory Focus Questionnaire (RFQ)

Beantworte die folgenden Items auf einer Skala von 1 = nie bis 5 = sehr oft.
Achtung:
Für die letzten beiden Items (10. und 11.) bedeutet die Skala 1 = trifft gar nicht zu bis 5 = trifft voll und ganz zu.

	nie		manchmal		sehr oft
1. Fällt es dir im Vergleich zu Anderen schwer, deine Vorstellungen im Leben umzusetzen?	○	○	○	○	○
2. Hast du in deiner Kindheit und Jugend jemals Grenzen überschritten und Dinge getan, die von deinen Eltern nicht toleriert wurden?	○	○	○	○	○
3. Wie oft hast du etwas erreicht, das dich anspornte, dich danach noch mehr anzustrengen?	○	○	○	○	○
4. Hast du in deinem Leben häufig die Nerven deiner Mitmenschen strapaziert?	○	○	○	○	○
5. Wie oft hast du dich an die Regeln und Vorschriften gehalten, die von deinen Eltern festgelegt wurden?	○	○	○	○	○
6. Hast du in deinem Leben jemals Dinge getan, die deine Eltern als verwerflich bezeichnet hätten?	○	○	○	○	○
7. Bist du erfolgreich bei Dingen, die du zum ersten Mal ausprobierst?	○	○	○	○	○
8. Mangelnde Sorgfalt hat mir schon ab und zu Probleme bereitet.	○	○	○	○	○
9. Wenn es darum geht, Dinge zu erreichen, die mir wichtig sind, bin ich nicht so erfolgreich, wie ich es idealerweise gerne sein würde.	○	○	○	○	○
10. Ich habe das Gefühl, auf dem Weg zu einem erfolgreichen Leben Fortschritte zu machen.	○	○	○	○	○
11. Es gibt nur wenige Hobbies und Tätigkeiten, die mich so interessieren, dass ich bereit bin, Anstrengungen in sie zu investieren.	○	○	○	○	○

Positive and Negative Affect Schedule (PANAS)

Die folgenden Wörter beschreiben unterschiedliche Gefühle und Empfindungen.

Lies jedes Wort und trage dann in die Skala neben jedem Wort die Intensität ein. Du hast die Möglichkeit, zwischen fünf Abstufungen zu wählen.

Gib an, wie du dich in den letzten 3 Tagen gefühlt hast.

	gar nicht	ein bisschen	einigermaßen	erheblich	äußerst
aktiv	○	○	○	○	○
bekümmert	○	○	○	○	○
interessiert	○	○	○	○	○
freudig erregt	○	○	○	○	○
verärgert	○	○	○	○	○
stark	○	○	○	○	○
schuldig	○	○	○	○	○
erschrocken	○	○	○	○	○
feindselig	○	○	○	○	○
angeregt	○	○	○	○	○
stolz	○	○	○	○	○
gereizt	○	○	○	○	○
begeistert	○	○	○	○	○
beschämt	○	○	○	○	○
wach	○	○	○	○	○
nervös	○	○	○	○	○
entschlossen	○	○	○	○	○
aufmerksam	○	○	○	○	○
durcheinander	○	○	○	○	○
ängstlich	○	○	○	○	○

Motivation Scale

Die folgenden Items beziehen sich direkt auf das Spiel.

	ganz und gar nicht			teils/teils			äußerst
1. Wie motiviert warst du, alle Steinchen eines Blocks zu erhalten (d.h. vor dem Kobold zu schützen)?	○	○	○	○	○	○	○
2. Wie motiviert warst du, alle Fragen richtig zu beantworten?	○	○	○	○	○	○	○
3. Wie sehr hat dich die Aussicht auf einfache Bonusfragen motiviert, die Blöcke so schnell wie möglich zu beantworten?	○	○	○	○	○	○	○
4. Wie gut hat dir das Spiel insgesamt gefallen?	○	○	○	○	○	○	○
5. Wie gerne würdest du es (mit anderen Fragen) noch einmal spielen wollen?	○	○	○	○	○	○	○
6. Wie anstrengend fandest du die Eingabe der Codes?	○	○	○	○	○	○	○
7. Wie sehr interessierst du dich generell für Quiz-Spiele?	○	○	○	○	○	○	○

Note. Only the items 1, 2, 4, and 5 were used to calculate *Motivation*.

APPENDIX C

Game Instructions

Prevention Group

Spielregeln (Teil 1 von 3)

Du lebst in einem kleinen Königreich, das seit vielen Jahren von einem klugen und gerechten König regiert wird. Zur Feier seines Geburtstages veranstaltet er ein großes Fest, bei dem seine Untertanen etwas aus der königlichen Schatzkammer gewinnen können. Doch zunächst muss dafür jeder sein Wissen bei einem Spiel unter Beweis stellen, das der König eigens zu diesem Zweck erfunden hat.

Das Spiel besteht aus 4 Blöcken mit je 6 Quizfragen, die jeweils vier Antwortmöglichkeiten haben, von denen immer nur eine richtig ist. Insgesamt wirst du also 24 Fragen beantworten.
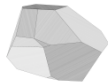
Mit jeder Antwort, die du gibst, - egal ob richtig oder falsch - sammelst du ein kleines schwarzes Steinchen. So sieht es

aus:

Am Ende jedes Blocks kommen alle schwarzen Steinchen, die du in diesem Block gesammelt hast (maximal 6 Steinchen), in eine Schüssel aus Elfenbein, die gefüllt ist mit dem Wasser der Wahrheit.

War eine Antwort richtig, wird das Steinchen der zugehörigen Frage im Wasser der Wahrheit weiß wie

Schnee:
War sie falsch, bleibt es schwarz.

Hast du also z.B. in einem Block die Hälfte der Fragen richtig beantwortet (3 von 6), befinden sich in der Schüssel des Blocks 3 weiße (= Anzahl richtige Antworten) und 3 schwarze Steinchen (= Anzahl falsche Antworten).
Welche deiner Antworten genau richtig waren, wird dir aber nicht mitgeteilt.

Spielregeln (Teil 2 von 3)

Vor dir auf dem Tisch liegen 4 Minischokoladen.

Jede Minischokolade steht für einen der vier Blöcke. Sie gehören dir. Doch bevor du sie mitnehmen (und verzehren) darfst, gilt es, sie im Spiel zu "verteidigen".

Denn befinden sich nach einem Block im Wasser der Wahrheit mehr als 3 schwarze Steinchen (hast du also mehr als 3 Fragen falsch beantwortet), verlierst du die Minischokolade des entsprechenden Blocks.

Am Ende jedes Blocks entscheidet sich also im Wasser der Wahrheit anhand der Farbe der Steinchen, ob du die Minischokolade dieses Blocks behalten darfst (nicht mehr als 3 schwarze Steinchen) oder ob sie dir wieder weggenommen werden muss (mehr als 3 schwarze Steinchen).

Ist es dir nicht gelungen, deine Minischokolade zu verteidigen, dann hebe bitte die Hand und rufe den Versuchsleiter zu dir,

damit er dir die Minischokolade des Blocks <u>wegnehmen</u> kann. So erfordern es die Regeln des Königs.

Beantwortest du also z.B. im 1. Block 4 Fragen falsch, muss dir der Versuchsleiter die Minischokolade des 1. Blocks wegnehmen und du setzt das Spiel mit 3 verbliebenen Minischokoladen fort.

Doch das ist noch nicht alles:

Eine Minischokolade ist zudem 10 € "potenzielles Preisgeld" wert.

Potenzielles Preisgeld ist echtes Geld, das du nach Abschluss der Studie gewinnen kannst.
In zwei Wochen wird es eine Verlosung geben, bei der aus der Menge aller, die an der Studie teilgenommen haben, drei Personen zufällig ausgewählt werden, die ihr im Spiel erspieltes Preisgeld tatsächlich gewinnen.

Zu Beginn des Spiels verfügst du also nicht nur über 4 Minischokoladen, sondern auch bereits über ein potenzielles Preisgeld von <u>40 €</u> (4 Minischokoladen x 10 €).

Mit jeder Minischokolade, die dir wieder weggenommen werden muss, verlierst du somit auch 10 € potenzielles Preisgeld.

<u>Spielregeln (Teil 3 von 3)</u>

Zurzeit treibt ein gemeiner Kobold im Königreich sein Unwesen.

Er hat es auf deine schwarzen Steinchen abgesehen.

Niemand weiß, wann und wie oft er auftauchen wird.
Nur eines ist sicher: Wenn er kommt, dann immer direkt <u>nach einer Frage</u>, um dir das soeben gesammelte Steinchen zu <u>stehlen</u>.

<u>Vor jeder Frage</u> hast du deshalb die Möglichkeit, das Steinchen, das du sammeln wirst, gegen einen Angriff des Kobolds zu schützen.

Hierzu musst du einen Zahlencode <u>rückwärts</u> in ein dafür vorgesehenes Antwortfeld übertragen.
Die korrekte Eingabe des Codes bewirkt einen <u>Schutzzauber</u>, durch den das Steinchen sicher ist vor den Klauen des Kobolds.

Ein solcher Code wäre zum Beispiel:

8y66c9f8650555075952077-y5y3f0i188e (der Bindestrich ist ein normaler Bestandteil des Codes).

Der Schutzzauber wäre aktiv, wenn ins Antwortfeld eingegeben wurde:

e881i0f3y5y-7702595705550568f9c66y8

Der Code besteht stets aus Zahlen (0-9), kleinen Buchstaben und einem Bindestrich.
Da sich die Zahl 1 und der kleine Buchstabe l (wie in "lila") in dieser Schriftart vielleicht manchmal

nicht so leicht unterscheiden lassen, gibt es in den Codes nie den Buchstaben l. Im Zweifel ist immer die Zahl 1 gemeint.

Beachte: Der Code schützt immer nur die <u>unmittelbar folgende Frage</u>.

Kobold-Wahrscheinlichkeit

Das königliche Institut für Koboldforschung hat für jede Frage ermittelt, wie wahrscheinlich es ist, dass der Kobold auftauchen wird.
Vor jeder Frage wird dir mitgeteilt, in wie vielen Fällen der Kobold normalerweise bei dieser Frage auftaucht.

Zeitmessung

Dem König geht es auch um die Tatkraft und das Geschick seiner Untertanen.
Deshalb wird während des Spiels im Hintergrund eine Uhr mitlaufen, die registriert, <u>wie viel Zeit du für einen Block</u> gebraucht hast.

In Vortests wurden für die Blöcke Durchschnittszeiten ermittelt und daraus drei Kategorien gebildet: In Kategorie A wurden die schnellen, in Kategorie B die durchschnittlichen und in Kategorie C die langsamen Spielerinnen und Spieler eingeteilt.

Gehörst du am Ende des Spiels in zumindest <u>3 der 4</u> Blöcke in die Kategorie A der schnellen Spielerinnen und Spieler, erhältst du die Chance, <u>einfache Bonusfragen</u> zu beantworten, um dadurch dein potenzielles Preisgeld um 7 € zu erhöhen.

Promotion Group

<u>Spielregeln (Teil 1 von 2)</u>

Du lebst in einem kleinen Königreich, das seit vielen Jahren von einem klugen und gerechten König regiert wird. Zur Feier seines Geburtstages veranstaltet er ein großes Fest, bei dem seine Untertanen etwas aus der königlichen Schatzkammer gewinnen können. Doch zunächst muss dafür jeder sein Wissen bei einem Spiel unter Beweis stellen, das der König eigens zu diesem Zweck erfunden hat.

Das Spiel besteht aus 4 Blöcken mit je 6 Quizfragen, die jeweils vier Antwortmöglichkeiten haben, von denen immer nur eine richtig ist. Insgesamt wirst du also 24 Fragen beantworten.
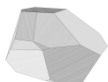
Mit jeder Antwort, die du gibst, - <u>egal ob richtig oder falsch</u> - sammelst du ein kleines schwarzes Steinchen. So sieht es

aus:

<u>Am Ende jedes Blocks</u> kommen alle schwarzen Steinchen, die du in diesem Block gesammelt hast (maximal 6 Steinchen), in eine Schüssel aus Elfenbein, die gefüllt ist mit dem <u>Wasser der Wahrheit</u>.

War eine Antwort <u>richtig</u>, wird das Steinchen der zugehörigen Frage im Wasser der Wahrheit <u>weiß</u> wie Schnee:

War eine Antwort falsch, bleibt es schwarz.

Hast du also z.B. in einem Block genau die Hälfte der Fragen richtig beantwortet (3 von 6), befinden sich in der Schüssel des Blocks 3 weiße (= Anzahl richtige Antworten) und 3 schwarze Steinchen (= Anzahl falsche Antworten).
Welche deiner Antworten genau richtig waren, wird dir aber nicht mitgeteilt.

Doch jetzt kommt's: Sind im Wasser der Wahrheit 3 oder mehr deiner Steinchen weiß geworden, gewinnst du für diesen

Block eine Minischokolade.

Am Ende eines Blocks entscheidet sich im Wasser der Wahrheit also anhand der Farbe deiner Steinchen, ob du eine Minischokolade gewinnst (3 oder mehr weiße Steinchen) oder nicht (weniger als 3 weiße Steinchen).

Ist es dir gelungen, dass sich in der Schüssel eines Blocks 3 oder mehr weiße Steinchen befinden, dann hebe bitte die Hand und rufe den Versuchsleiter zu dir, damit er dir direkt deine wohl verdiente Minischokolade geben kann.

Eine Minischokolade ist zudem 10 € "potenzielles Preisgeld" wert.

Potenzielles Preisgeld ist echtes Geld, das du nach Abschluss der Studie gewinnen kannst.
In zwei Wochen wird es eine Verlosung geben, bei der aus der Menge aller, die an der Studie teilgenommen haben, drei Personen zufällig ausgewählt werden, die ihr im Spiel erspieltes Preisgeld tatsächlich gewinnen.

Beantwortest du also in allen vier Blöcken jeweils 3 oder mehr Fragen richtig, gewinnst du nicht nur vier Minischokoladen, sondern für die Verlosung auch ein potenzielles Preisgeld von 40 € (4 Minischokoladen x 10 €).

Spielregeln (Teil 2 von 2)

Zurzeit treibt ein gemeiner Kobold im Königreich sein Unwesen.

Er hat es auf deine schwarzen Steinchen abgesehen.

Niemand weiß, wann und wie oft er auftauchen wird. Nur eines ist sicher: Wenn er kommt, dann immer direkt nach einer Frage, um dir das soeben gesammelte Steinchen zu stehlen.

Vor jeder Frage hast du deshalb die Möglichkeit, das Steinchen, das du sammeln wirst, gegen einen Angriff des Kobolds zu schützen.

Hierzu musst du einen Code rückwärts in ein dafür vorgesehenes Antwortfeld übertragen. Die korrekte Eingabe des Codes bewirkt einen Schutzzauber, durch den das Steinchen sicher ist vor den Klauen des Kobolds.

Ein solcher Code wäre zum Beispiel:

8y66c9f8650555075952077-y5y3f0i188e (der Bindestrich ist ein normaler Bestandteil des Codes).

Der Schutzzauber wäre aktiv, wenn ins Antwortfeld eingegeben wurde:

e881i0f3y5y-7702595705550568f9c66y8

Der Code besteht stets aus Zahlen (0-9), kleinen Buchstaben und einem Bindestrich.
Da sich die Zahl 1 und der kleine Buchstabe l (wie in "lila") in dieser Schriftart im Eifer des Gefechts vielleicht manchmal nicht so leicht unterscheiden lassen, gibt es in den Codes nie den Buchstaben l. Im Zweifel ist immer die Zahl 1 gemeint.

Beachte: Der Code schützt immer nur die unmittelbar folgende Frage.

Kobold-Wahrscheinlichkeit

Das königliche Institut für Koboldforschung hat für jede Frage ermittelt, wie wahrscheinlich es ist, dass der Kobold auftauchen wird.
Vor jeder Frage wird dir mitgeteilt, in wie vielen Fällen der Kobold normalerweise bei dieser Frage auftaucht.

Zeitmessung

Dem König geht es auch um die Tatkraft und das Geschick seiner Untertanen.
Deshalb wird während des Spiels im Hintergrund eine Uhr mitlaufen, die registriert, wie viel Zeit du für einen Block gebraucht hast.

In Vortests wurden für die Blöcke Durchschnittszeiten ermittelt und daraus drei Kategorien gebildet: In Kategorie A wurden die schnellen, in Kategorie B die durchschnittlichen und in Kategorie C die langsamen Spielerinnen und Spieler eingeteilt.

Gehörst du am Ende des Spiels in zumindest 3 der 4 Blöcke in die Kategorie A der schnellen Spielerinnen und Spieler, erhältst du die Chance, einfache Bonusfragen zu beantworten, um dadurch dein potenzielles Preisgeld um 7 € zu erhöhen.

APPENDIX D

Self-Test (correct answers are bold)

Prevention group

Self-Test zu den Spielregeln

Pro Frage ist immer nur eine Antwort richtig.

Bei Fragen und Unklarheiten kannst du dich jederzeit an den Versuchsleiter wenden.

1. Was geschieht, wenn ich eine Frage beantworte?

    ○   Ich sammle ein weißes Steinchen.

    ◉   **Ich sammle ein schwarzes Steinchen.**

    ○   Ich sammle eine Minischokolade.

2. Sehe ich nach jeder Frage, ob meine Antwort falsch war?

    ○   Nein, aber anhand der Steinchen, die weiß geworden sind, weiß ich nach jedem Block, wie viele meiner Antworten falsch waren.

    ○   Nein, aber anhand der Steinchen, die schwarz geblieben sind, weiß ich nach jedem Block, wie viele meiner Antworten richtig waren.

    ◉   **Nein, aber anhand der Steinchen, die schwarz geblieben sind, weiß ich nach jedem Block, wie viele meiner Antworten falsch waren.**

3. Was hat es mit dem Kobold auf sich?

    ○   Der Kobold kommt in zufälligen Abständen und schenkt mir Minischokoladen.

    ◉   **Der Kobold kommt in zufälligen Abständen und will mir meine schwarzen Steinchen stehlen.**

    ○   Der Kobold kommt in zufälligen Abständen und will mir meine weißen Steinchen stehlen.

4. Wann ist mit einer Attacke des Kobolds zu rechnen?

○ Unmittelbar vor einer Frage.

◉ **Unmittelbar nach einer Frage.**

○ Einmal am Anfang und einmal am Ende des Spiels.

5. Wie kann ich mich gegen den Kobold schützen?

○ Indem ich nach einer Frage, die ich schützen wollte, einen Code in ein dafür vorgesehenes Antwortfeld übertrage.

○ Indem ich vor einer Frage, die ich schützen will, einen Zauberspruch aufsage.

◉ **Indem ich vor einer Frage, die ich schützen will, einen Code in ein dafür vorgesehenes Antwortfeld übertrage.**

6. Was habe ich pro Block zu verlieren?

◉ **Ich verliere eine Minischokolade im Wert von 10 € potenziellem Preisgeld, wenn ich in einem Block 4 oder mehr Fragen falsch beantworte.**

○ Ich verliere eine Minischokolade im Wert von 10 € potenziellem Preisgeld, wenn ich in einem Block 3 oder mehr Fragen falsch beantworte.

○ Ich verliere eine Minischokolade im Wert von 10 € potenziellem Preisgeld, wenn ich in einem Block 2 oder mehr Fragen falsch beantworte.

7. Wann muss ich den Versuchsleiter zu mir rufen?

◉ **Wenn sich im Wasser der Wahrheit eines Blocks mehr als 3 schwarze Steinchen befinden und ich somit meine Minischokolade im Wert von 10 € potenziellem Preisgeld verliere.**

○ Wenn sich im Wasser der Wahrheit eines Blocks nicht mehr als 3 schwarze Steinchen befinden und ich somit meine Minischokolade im Wert von 10 € potenziellem Preisgeld behalten darf.

○ Wenn sich im Wasser der Wahrheit eines Blocks 3 oder mehr weiße Steinchen befinden und ich somit meine Minischokolade im Wert von 10 € potenziellem Preisgeld behalten darf.

8. Was bedeutet "potenzielles Preisgeld"?

○ Imaginäres Geld, das ich dem Kobold schulde.

○ Echtes Geld, das ich nach dem Spiel sicher ausgezahlt bekomme.

◉ **Echtes Geld, das ich nach Beendigung der Studie bei einer Verlosung gewinnen kann.**

9. Stichwort Zeitmessung: Wann erhalte ich am Ende des Spiels die Chance, mit einfachen Bonusfragen mein potenzielles Preisgeld um 7 € zu erhöhen?

○ Wenn ich in allen 4 Blöcken in die Kategorie A der schnellen Spielerinnen und Spieler gehöre.

◉ **Wenn ich in zumindest 3 der 4 Blöcke in die Kategorie A der schnellen Spielerinnen und Spieler gehöre.**

○ Wenn ich in zumindest 2 der 4 Blöcke in die Kategorie A der schnellen Spielerinnen und Spieler gehöre.

10. Welche Zeit wird dabei genau gemessen?

○ Die Zeit, die ich für das gesamte Spiel brauche.

○ Die Zeit, die ich für jede einzelne Frage brauche.

◉ **Die Zeit, die ich für einen Block brauche.**

Promotion group

1. Was geschieht, wenn ich eine Frage beantworte?

○ Ich sammle ein weißes Steinchen.

◉ **Ich sammle ein schwarzes Steinchen.**

○ Ich sammle eine Minischokolade.

2. Sehe ich nach jeder Frage, ob meine Antwort richtig war?

○ Nein, aber anhand der Steinchen, die weiß geworden sind, weiß ich nach jedem Block, wie viele meiner Antworten falsch waren.

○ Nein, aber anhand der Steinchen, die schwarz geblieben sind, weiß ich nach jedem Block, wie viele meiner Antworten richtig waren.

◉ **Nein, aber anhand der Steinchen, die weiß geworden sind, weiß ich nach jedem Block, wie viele meiner Antworten richtig waren.**

3. Was hat es mit dem Kobold auf sich?

○ Der Kobold kommt in zufälligen Abständen und schenkt mir Minischokoladen.

◉ **Der Kobold kommt in zufälligen Abständen und will mir meine schwarzen Steinchen stehlen.**

○ Der Kobold kommt in zufälligen Abständen und will mir meine weißen Steinchen stehlen.

4. Wann ist mit einer Attacke des Kobolds zu rechnen?

○ Unmittelbar vor einer Frage.

◉ **Unmittelbar nach einer Frage.**

○ Einmal am Anfang und einmal am Ende des Spiels.

5. Wie kann ich mich gegen den Kobold schützen?

○ Indem ich nach einer Frage, die ich schützen wollte, einen Code in ein dafür vorgesehenes Antwortfeld übertrage.

○ Indem ich vor einer Frage, die ich schützen will, einen Zauberspruch aufsage.

◉ **Indem ich vor einer Frage, die ich schützen will, einen Code in ein dafür vorgesehenes Antwortfeld übertrage.**

6. Was kann ich pro Block gewinnen?

○ Ich gewinne eine Minischokolade im Wert von 10 € potenziellem Preisgeld, wenn ich in einem Block 4 oder mehr Fragen richtig beantworte.

◉ **Ich gewinne eine Minischokolade im Wert von 10 € potenziellem Preisgeld, wenn ich in einem Block 3 oder mehr Fragen richtig beantworte.**

○ Ich gewinne eine Minischokolade im Wert von 10 € potenziellem Preisgeld, wenn ich in einem Block 2 oder mehr Fragen richtig beantworte.

7. Wann muss ich den Versuchsleiter zu mir rufen?

◉ **Wenn sich im Wasser der Wahrheit eines Blocks 3 oder mehr weiße Steinchen befinden und ich somit eine Minischokolade im Wert von 10 € potenziellem Preisgeld gewonnen habe.**

○ Wenn sich im Wasser der Wahrheit eines Blocks weniger als 3 weiße Steinchen befinden und ich somit keine Minischokolade im Wert von 10 € potenziellem Preisgeld gewonnen habe.

○ Wenn sich im Wasser der Wahrheit eines Blocks mehr als 3 schwarze Steinchen befinden und ich somit eine Minischokolade im Wert von 10 € potenziellem Preisgeld gewonnen habe.

8. Was bedeutet "potenzielles Preisgeld"?

○ Imaginäres Geld, das ich dem Kobold schulde.

○ Echtes Geld, das ich nach dem Spiel sicher ausgezahlt bekomme.

◉ **Echtes Geld, das ich nach Abschluss der Studie bei einer Verlosung gewinnen kann.**

9. Stichwort Zeitmessung: Wann erhalte ich am Ende des Spiels die Chance, mit einfachen Bonusfragen mein potenzielles Preisgeld um 7 € zu erhöhen?

○ Wenn ich in allen 4 Blöcken in die Kategorie A der schnellen Spielerinnen und Spieler gehöre.

◉ **Wenn ich in zumindest 3 der 4 Blöcke in die Kategorie A der schnellen Spielerinnen und Spieler gehöre.**

○ Wenn ich in zumindest 2 der 4 Blöcke in die Kategorie A der schnellen Spielerinnen und Spieler gehöre.

10. Welche Zeit wird dabei genau gemessen?

○ Die Zeit, die ich für das gesamte Spiel brauche.

○ Die Zeit, die ich für jede einzelne Frage brauche.

○ **Die Zeit, die ich für einen Block brauche.**

APPENDIX E

Exemplary Pages of the Game

Beginn des 1. Blocks.

Drücke auf WEITER, um zu Frage 1 zu gelangen.

Kobold-Wahrscheinlichkeit: Bei dieser Frage kommt der Kobold in 3 von 10 Fällen.

Möchtest du das Steinchen, das du bei Frage 1 sammeln wirst, schützen?

Ja   Nein
○   ○

WEITER

Figure 2. *Protection Decision Page*

1. Welches chemische Element macht mehr als die Hälfte der Masse eines menschlichen Körpers aus?

○ Eisen

○ Kohlenstoff

○ Kalzium

○ Sauerstoff

WEITER

Figure 3. *Question Page*

Du hast dich entschieden, das Steinchen, das du bei Frage 1 sammeln wirst, zu schützen.

Übertrage hierfür den folgenden Code rückwärts in das freie Antwortfeld.

Drücke danach auf WEITER, um zu Frage 1 zu gelangen.

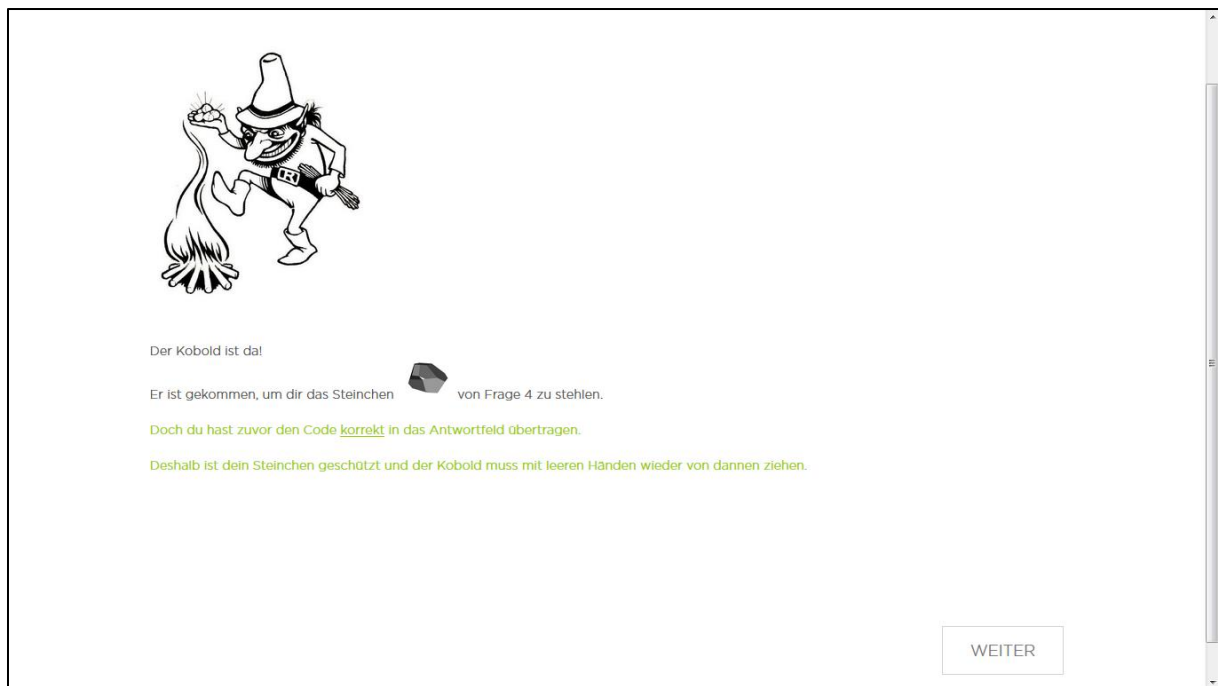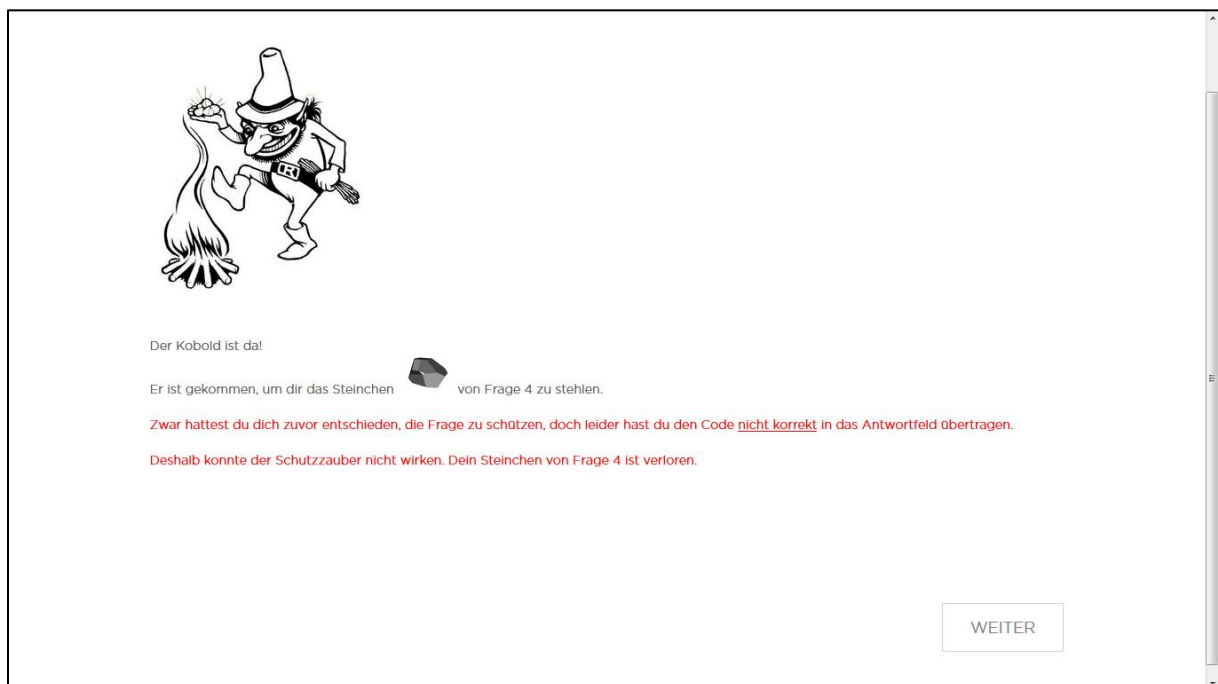Der Code lautet: 4q43z6t7686242723950116-q9p1v5q888d

WEITER

Figure 4. *Code Input Page*

Deine Antwort wurde registriert.

Du hast ein schwarzes Steinchen   gesammelt.

WEITER

Figure 5A. *No Attack Page*

Figure 5B. *Stone Safe Page*

Figure 5C. *Stone Lost Page I* (stone lost due to incorrect code input)
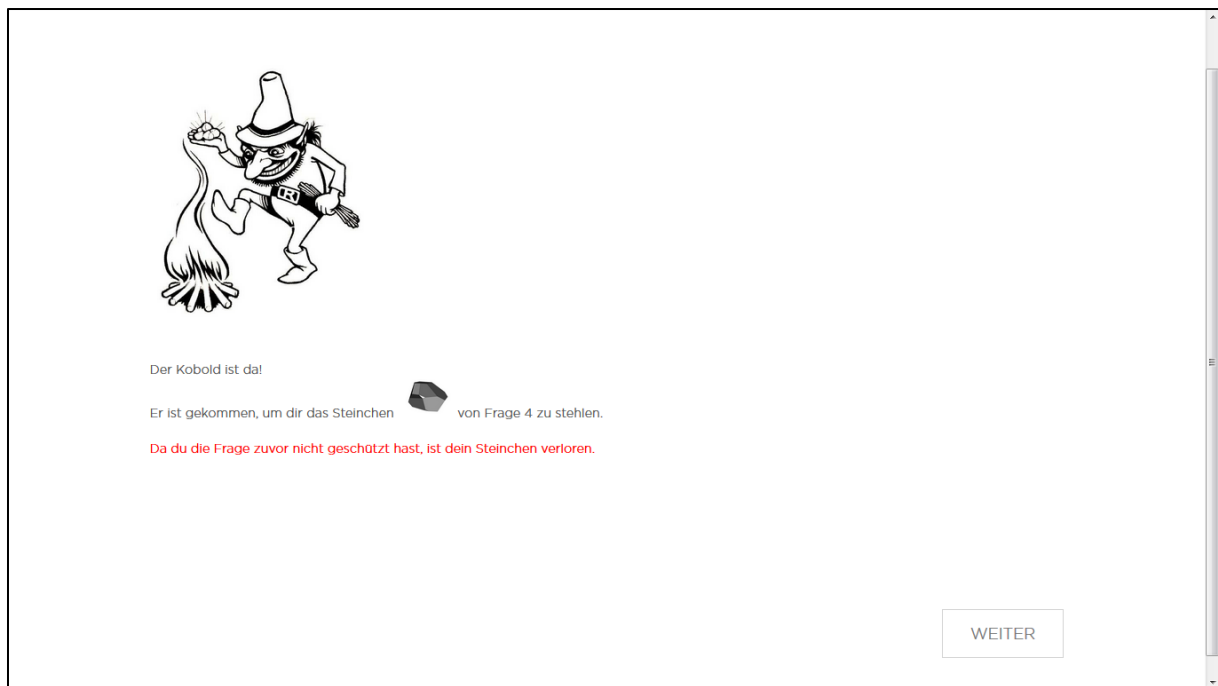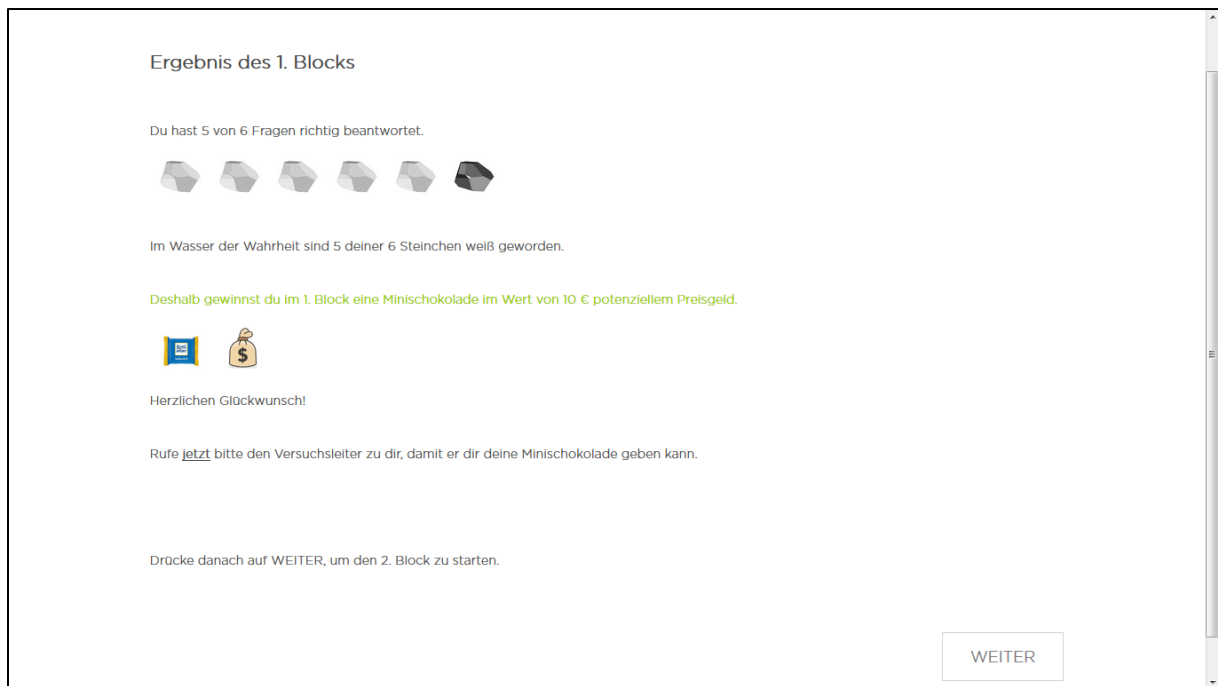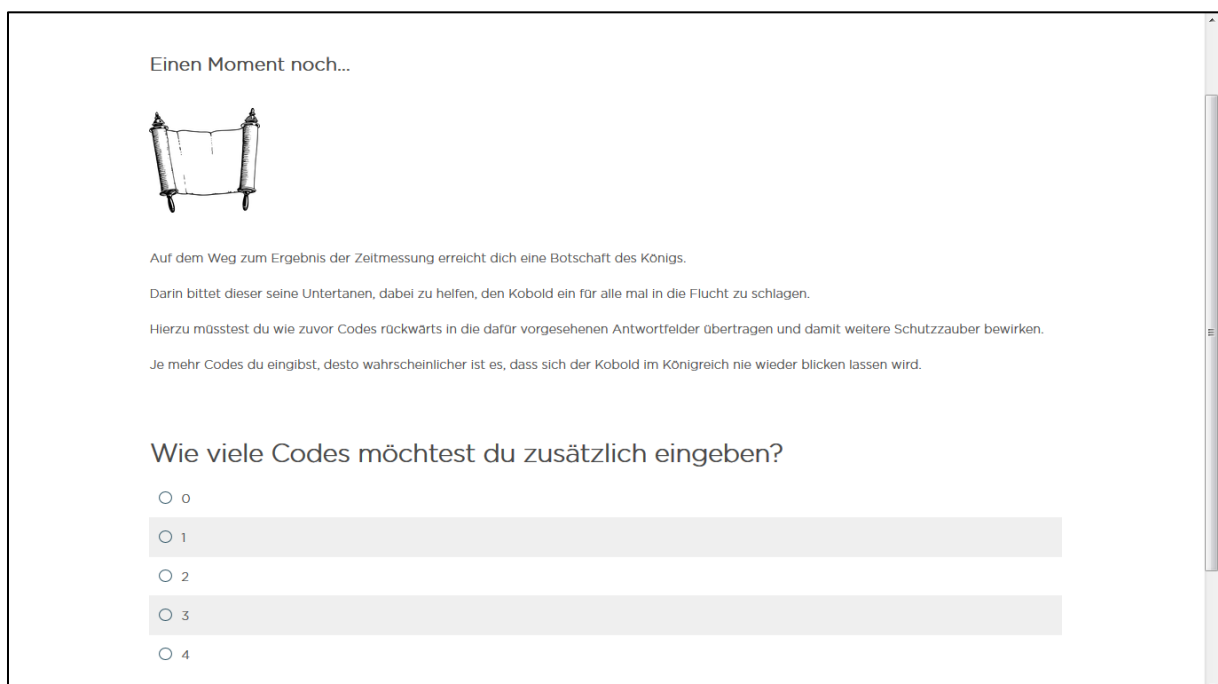
Figure 5D. *Stone Lost Page II* (stone lost due to skipped code input)

Figure 6. *Time Measurement Page*

Figure 7. *Water of Truth Page*

Figure 8. *Additional Codes Page*

APPENDIX F

Zusammenfassung

In der Forschung zu Motivation und Zielsetzung hat die Regulationsfokustheorie (Higgins, 1997) in den letzten Jahrzehnten eine maßgebliche Rolle eingenommen. Zwei der bekanntesten und am weitesten verbreiteten Instrumente zur Messung des regulatorischen Fokus, RFQ und GRFM, mangelt es jedoch an Validität (Summerville & Roese, 2008). Deshalb war es das Ziel der Studie, ein neues Maß für den Präventionsfokus einer Person zu entwickeln, das anstelle von Introspektion und Selbstbericht auf tatsächlich gezeigtem Verhalten basiert. Das neue Maß war Teil eines Quiz-Spiels, in dem sich die Probanden gegen zufällige Attacken eines "gemeinen Kobolds" schützen konnten, indem sie einen langen und komplexen Code eingaben. Wie oft die Probanden den Code eingaben, diente als Maß für die Stärke des Präventionsfokus. Die Stichprobe ($N = 120$, 54% weiblich, $M_{Alter} = 25.7$, $SD_{Alter} =$ 7.9, im Bereich von 19 – 70 Jahren) bestand hauptsächlich aus Studentinnen und Studenten der Universität Wien. Um das Spiel zu validieren, wurden die Probanden zufällig entweder einer Promotion-Gruppe (Gewinn/Nicht-Gewinn-Framing, $N = 62$) oder einer Prevention-Gruppe (Nicht-Verlust/Verlust-Framing, $N = 58$) zugeteilt. Zudem beantworteten die Probanden die Fragebögen RFQ und WRF, um zu prüfen, ob der vom Spiel gemessene Präventionsfokus mit externen Maßen des regulatorischen Fokus korreliert. Die beiden Gruppen unterschieden sich nicht darin, wie viele Codes im Durchschnitt eingegeben wurden, $U(n_{Prevention} = 58, n_{Promotion} = 62) = 1.787$, $z = -0.06$, $p = .95$. Die Anzahl der Code-Eingaben korrelierte jedoch signifikant mit der Präventionsskala der WRF, $r(120) = .22$, $p < .05$, und mit der Subskala *Security*, $r(120) = .26$, $p < .01$, sowie beinahe signifikant mit der Subskala *Gains*, $r(120) = -.18$, $p = .053$. *Security* und *Gains* waren signifikante Prädiktoren für die Anzahl der Code-Eingaben, selbst nachdem für Motivation, Involviertheit in das Spiel und Affekt kontrolliert worden war. Das Spiel verkörpert deshalb einen ersten wichtigen Schritt

auf der Suche nach einem neuen, verhaltensbezogenen und deshalb valideren Maß für den

Präventionsfokus.

        Schlagwörter: Motivation, regulatorischer Fokus, Präventionsfokus, Maß,

strategisches Verhalten